# Annual Report
# of the
# Department of Agriculture

For the Year Ended 31st December, 1959

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of the
Department of Agriculture

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UGANDA PROTECTORATE

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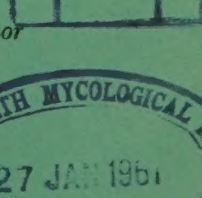


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3. Poor early rains made the season particularly unfavourable for annual crops and full advantage could not be taken of the plentiful second rains for growing cash crops owing to the urgent need to establish food crops. There was an adequate carry-over of food from 1958 but poor harvests from the early rains plantings caused supplies to be very short in the third quarter. Second rains sowings, however, enabled the position to be restored.

4. The 1958/59 cotton crop was the second largest on record largely due to the successful early planting campaign in 1958. Lack of rain delayed sowing in the current season and the planting of over $1\frac{1}{2}$ million acres was a very satisfactory achievement in the circumstances. The second rains favoured the crop but prospects remained below average at the end of the year. The pedigree seed increase schemes continued according to plan and the B.P.52 area was extended to Busoga and West Nile zones. 14,000 acres of cotton were successfully sprayed against pests and all cotton seed for planting was dressed against blackarm disease.

5. Coffee production was again a record, the output of all types exceeding 100,000 tons of clean coffee. For the first time ever the return to the African grower from coffee exceeded that of cotton. Sugar production was also the highest ever as also was the output of made tea. Cocoa planting continued and the area established by African farmers increased to 100 acres. Record crops of fire- and flue-cured tobacco were grown and a pilot scheme was started to raise the quality of fire-cured leaf to export standard: a small quantity of dark leaf was exported.

6. Farmers participated to a far greater extent in the processing of their crops and the number of estate coffee factories operated by associations of growers and co-operatives increased to 24. The number of individual farmers and co-operatives flue-curing tobacco increased to 40.

7. The first group of agricultural assistants trained at Bukalasa Farm Institute were appointed to the Department at the end of the year. Arapai Farm Institute had a year of sound development and the building of the first district farm institute was finished.

8. The Farm Planning Service was again unable to deal with all the demands of farmers and continued to follow its policy of limited development until more detailed knowledge of the economics of African farming practices is available.

9. The field work of the soil and vegetation surveys of the Protectorate was completed and the first report, that of the Eastern Province Survey, was compiled and distributed.

10. Despite preoccupation with the production drive all departmental field staff continued to devote an important part of their time to soil conservation measures on both arable and grazing land and to getting the farmers to adopt improved agronomic practices.

## II. WEATHER

11. The weather pattern was abnormal, being marked by exceptionally poor rains from the second half of May until early August in most parts of the Protectorate. The second rains were above average, October and November being particularly wet.

12. During January and February normal dry season conditions were experienced, followed in March by a general increase in showers. During April there was heavy localised rain in the first half of the month prior to the break of the main rains during the third week. Rainfall was plentiful until mid-May when falls again became localised. There were fairly good rains at the end of June in the Eastern Province but generally the month was dry with only local rain; conditions were similar in July. The second rains began in early August except in the south-west of the Protectorate where the dry weather persisted until early September. Rainfall was adequate in September with heaviest falls in the north and west. October and November were unusually wet months, particularly in the south-west. The rains tailed off in December after which conditions were mainly hot and dry.

## III. FOOD CROPS AND FOOD SUPPLIES

13. Apart from minor shortages which were made good locally, food supplies were sufficient throughout the year. In July and August the persistent dry weather gave cause for concern in view of the poor harvest from the spring sowings; the good second rains, however, enabled the position to be made secure.

14. The deficient early rains reduced the yields of annual food crops and severely restricted the acreage sown. Much re-sowing of finger millet was necessary and the main harvest was poor; particularly in the Northern and Eastern Provinces. Sorghum withstood the dry weather better than the finger millet and moderate yields were obtained in most areas. In Buganda plantain supplies were well maintained apart from temporary shortages which were made good by alternative foods. The food position became precarious in many parts of the Protectorate during the third quarter, supplies being particularly short in the Western Province. With the advent of planting rains, however, large acreages of root crops and pulses were established, all of which made excellent growth.

15. The planting of cassava varieties resistant to mosaic disease was extended chiefly in the Northern and Eastern Provinces. Progress in encouraging farmers to make use of Dieldrin for the control of banana weevil was, however, disappointing, despite the heavy loss of crop caused by this pest.

16. At the end of the year food was plentiful but grain reserves were considerably smaller than usual. Large acreages of sweet potatoes and cassava, however, made the position secure and no serious shortages were anticipated before the 1960 harvest ripened.

# IV. ECONOMIC CROPS

## (*a*) Cotton

(i) *1958/59 Season*

17. As the crop year is from 1st May to 30th April, this report deals only with the marketing of the 1958/59 crop.

18. After the wet weather early in the buying season, marketing proceeded smoothly in January and February. There was a slight fall in grade as a result of heavy rain in some zones during March, but a satisfactory standard was maintained. The total crop amounted to 400,682 bales which was the second largest crop on record. The following table gives comparative figures of production in the last 12 seasons:—

Table A.—Cotton Production, 1947/48–1958/59

| Season | Estimated acreage | Bales of lint (400 lb.) | Average yield of seed cotton per acre | Average price to growers (100 lb. seed cotton) |
|---|---|---|---|---|
| | | | *lb.* | *Shs. cts.* |
| 1947/48 .. | 1,036,829 | 170,066 | 218 | 20 42 |
| 1948/49 .. | 1,555,371 | 391,240 | 333 | 29 61 |
| 1949/50 .. | 1,628,473 | 339,788 | 282 | 31 75 |
| 1950/51 .. | 1,535,200 | 346,465 | 301 | 43 16 |
| 1951/52 .. | 1,514,157 | 380,304 | 332 | 47 56 |
| 1952/53 .. | 1,472,553 | 319,992 | 290 | 48 60 |
| 1953/54 .. | 1,611,223 | 397,594 | 325 | 49 40 |
| 1954/55 .. | 1,738,821 | 299,831 | 227 | 58 81 |
| 1955/56 .. | 1,585,500 | 363,449 | 305 | 52 11 |
| 1956/57 .. | 1,568,539 | 372,185 | 313 | 53 34 |
| 1957/58 .. | 1,617,013 | 350,693 | 288 | 54 90 |
| 1958/59 .. | 2,014,020 | 400,682 | 263 | 44 20 |

19. Prices to the grower fell by 11 cents (compared with prices in the 1957/58 season) to 47 and 46 cents per pound for B.P.52 and S.47 growths, respectively. Stained raw cotton was priced at 18 cents per pound except in the West Nile Zone where the price was 21 cents per pound. It is estimated that the total return to growers from the sale of their crop was £11,719,500. Despite the high level of production, the total return from the crop took second place to that of coffee from which growers obtained a return of £13,725,910. This was the first occasion on which the primary value of coffee exceeded that of cotton.

20. The number of ginneries operating was 134, of which 11 were operated by African growers' co-operative unions; the remainder were mainly in Asian ownership. All lint cotton was purchased from ginners by the Lint Marketing Board at prices based on the statutory fixed prices for raw cotton and the whole crop was sold on the Kampala auctions together with all AR cotton seed not required for planting.

(ii) *1959/60 Season*

21. The production campaign was intensified and greater use than ever was made of posters, leaflets and broadcasting; particular encouragement was given to early planting and spraying against *Lygus* and other pests. Although farmers responded well and large areas of land were opened early, the lack of rain seriously curtailed planting during the early rains from late May onwards. June was a very dry month in all the main cotton growing areas, and apart from local storms, similar main conditions prevailed in July. However, despite the unfavourable weather, farmers prepared land and planted whenever possible. In August preoccupation with food crops reduced the acreage sown to cotton; nevertheless, a much larger area was planted than usual during the month. Sowing was completed in September and the total acreage of 1,564,744 acres represents a very creditable achievement under difficult conditions. The good rains from September to late November benefited the later sowings but at the end of the year yield prospects were still below average and a total crop of 330,000 bales was forecast.

(iii) *Multiplication of New Strains of Cotton*

22. During 1959 the B.P.52 areas were extended to include the Busoga and West Nile zones. Apart from improved yields of lint the new development will give the additional advantage that in general B.P.52 lint is more readily sold on the world market than S.47. In the S.47 areas the improved strains from Serere Experiment Station were issued in all zones. In both areas the seed multiplication scheme whereby successive annual waves of pedigree seed emanating from the Empire Cotton Growing Corporation at Namulonge or Serere Experiment Station are issued in each zone, continued according to plan and no zone planted its own seed.

(iv) *Cotton Spraying*

23. It is now known that spiny boll-worm is also controlled with D.D.T. and recent trials have confirmed that no modification of the method originally designed for the control of *Lygus* bug is necessary in the light of this knowledge. During 1959 farmers sprayed 14,000 acres against cotton pests compared with 6,000 acres in the previous year. Lack of rain in the first half of the year resulted in much of the crop being planted too late to make spraying worthwhile; in the circumstances the acreage treated is regarded as a very satisfactory achievement. The greatest progress was made in Teso District where it is estimated 7,000 acres were sprayed.

**(*b*) Coffee**

(i) *Bugisu Arabica, 1958/59 Season*

24. The total production was 4,916 tons of parchment and 199 tons of "buni". All the crop was prepared by growers themselves using hand pulpers, apart from 79 tons produced by three central pulperies. Selected

growers were encouraged to produce a special grade. Details of the production of the three types of parchment are as under:—

| | *Tons* |
|---|---|
| Central Pulpery Parchment ... ... | 79 |
| Selected Farmers' Parchment ... | 30 |
| Bugisu Parchment—all grades ... | 4,807 |
| | 4,916 |

The average price paid to primary societies was Shs. 1/39cts. per pound of parchment. The Mbale mill started operations in December 1958 processing 2,873 tons of parchment; the remainder of the crop was milled at Nairobi and Moshi. The whole crop was auctioned in Nairobi. The average price realised per cwt. for clean coffee was Shs. 326 compared with Shs. 381 in 1957/58 and Shs. 481 in 1956/57. Although the fall in price is partly attributable to lower world prices for coffee, in the main the decreased value reflects the serious decline in quality.

(ii) *Bugisu Arabica, 1959/60 Season*

25. Except in the lower altitudes, rainfall was adequate throughout the year and there was improvement in the standard of weeding. Pruning was carried out satisfactorily by trained gangs and the whole operation cost £30,000. The recorded number of seedlings distributed was 823,900: weather conditions proved very unfavourable after distribution and seedling losses in the field were unusually high. In accordance with the recommendations of the Commission of Enquiry, the Department resumed responsibility for the supervision of nurseries, taking over this work on the 1st July: at the same time, the field staff of the Bugisu Coffee Board were transferred to the Department.

26. Owing to the serious loss of crop from insect attack and following on comprehensive trials conducted by the Research Division, spraying against *Antestia* was carried out by trained gangs. Experimental spraying against Lace Bug was carried out on a full scale. The total acreage treated against the two pests was 1,436 acres. A special drive was undertaken to encourage the complete picking of "buni" to reduce the heavy berry borer attack, and the amount of "buni" sold rose to 424 tons.

27. During the season two of the three pulperies reopened in 1958 were closed owing to the inability of the primary societies concerned to run them efficiently. One pulpery continued to operate and a new one of up-to-date design was built at Buluganya in North Bugisu. The production of Selected Farmers' Parchment was temporarily suspended prior to a closer

check being made on the processing equipment of those producing this parchment. Prices paid per pound to growers for the various grades were:—

| | *Shs.* | *Cts.* |
|---|---|---|
| Cherry (for preparation of central pulpery parchment) ... ... ... | 0 | 25 |
| Selected farmers' parchment ... ... | 1 | 25 |
| Bugisu No. I parchment ... ... | 1 | 25 |
| Bugisu No. II parchment ... ... | 0 | 75 |
| Bugisu No. III parchment ... ... | 0 | 50 |
| "Buni" ... ... ... ... | 0 | 50 |

28. By the end of the year the following tonnages had been collected by the co-operative union:—

| | *Tons* |
|---|---|
| Central pulpery parchment ... | 5 |
| Selected farmers' parchment ... | 39 |
| Bugisu parchment—all grades ... | 3,797 |

A total crop of 6,000 tons of parchment is expected. Details of crops produced in the last 12 seasons are shown in the following table:—

**Table B.—Bugisu Arabica Coffee**

| Season | Production (parchment) | Estimated value to growers |
|---|---|---|
| | *Tons* | £ |
| 1947/48 .. | 2,996 | 121,692 |
| 1948/49 .. | 2,857 | 173,799 |
| 1949/50 .. | 2,852 | 184,859 |
| 1950/51 .. | 3,896 | 442,104 |
| 1951/52 .. | 2,203 | 377,575 |
| 1952/53 .. | 2,307 | 633,040 |
| 1953/54 .. | 3,122 | 1,231,791 |
| 1954/55 .. | 6,170 | 2,015,662 |
| 1955/56 .. | 4,098 | 1,349,576* |
| 1956/57 .. | 5,175 | 1,420,353 |
| 1957/58 .. | 4,805 | 1,198,602 |
| 1958/59 .. | 4,912 | 764,072 |

* Includes value of 177 tons "buni".

(iii) *Bugisu Coffee Improvement Scheme*

29. This scheme, which is phased over five years from 1st July, 1959, is designed to improve the standard of coffee cultivation in Bugisu and to produce a high-quality coffee which can compete on equal terms with first quality grades from other Arabica coffee producing countries. Provision is made for five field officers and a sufficient number of agricultural assistants to cover all miruka in the main producing areas, thus establishing much closer contact between the primary producer and the advisory services of the Department.

30. Since the inauguration of the scheme, the field officers have been establishing themselves in their respective areas and have been recruiting and training their assistants. At the same time, a great deal of coffee husbandry improvement work has been put into effect throughout the district and a start made with improving the processing of the current crop.

(iv) *African-grown Coffee, Other than Bugisu Arabica*

31. The total production of African-grown coffee, other than that grown in Bugisu District, rose to the record figure of 93,261 tons of clean coffee, which was mainly Robusta but included approximately 2,500 tons of Arabica. The price to the grower at curing works fell during the year from 80 cents to 62 cents per pound for sun-dried Robusta cherry with corresponding changes in price for other grades. Prices prevailing at the end of the year were:—

| | *Shs.* | *Cts.* | |
|---|---|---|---|
| Robusta unhulled (Kiboko) ... | 0 | 62 | |
| Arabica unhulled (Kiboko) ... | 0 | 74 | |
| Robusta rough-hulled containing not more than 2 per cent of husk and/or extraneous matter | 1 | 17 | (minimum price) |
| Arabica rough-hulled containing not more than 2 per cent of husk and/or extraneous matter | 1 | 64 | (minimum price) |
| Arabica pulped and washed (parchment) ... ... | 1 | 70 | |

It is estimated that the value of the crop to the producers amounted to nearly £13,000,000.

32. Processing was carried out by 12 curing works and seven licensed hulleries in Mengo and Masaka districts. Six of the curing works were African-owned enterprises and all worked in 1959. Plans for the construction of two new curing works, one in Ankole District and the other in Toro District, were approved during the year. One registered co-operative union and 16 associations of growers were granted licences to operate estate coffee factories, bringing the total so licensed to 24. The total acreage of bearing coffee claimed by these groups was 128,000 acres and they exported a total of 18,328 tons of clean coffee during the year. Two of the factories produced washed coffee whilst the remainder (22) processed by the dry method.

33. The marketing of clean coffee (other than that produced by African estate coffee factories) was the responsibility of the Coffee Marketing Board which replaced the old Coffee Industry Board, as a result of legislation enacted during the year. Prices declined on the Kampala auctions from July onwards and the price ranges in pounds sterling were as follows:—

| *Grade 10* | *Grade 15* | *Grade 25* |
|---|---|---|
| 233–176 | 231½–175 | 220–172 |

34. In Buganda intensive efforts were maintained to improve the standard of husbandry and preparation. Encouraging progress was made in pruning, mulching and manuring, whilst the demand for drying trays increased steadily. Very heavy flowering took place at the end of the year and there were prospects of a large crop in 1960.

35. Spraying against *Antestia* was continued in the Western Province and a total of 2,770 acres was treated in Toro and Ankole districts. Excellent control of the pest was obtained where the coffee was properly pruned and well tended. It is estimated that spraying increased the cash return to growers in the two districts by over £70,000, whilst the return to Government from the increased production amounted to £15,000 in export tax. The cost of the spraying was £6,500.

36. Production figures by districts are given in Appendix IV (*b*). Details of total production during the last 11 years are as under:—

**Table C.—African Coffee Production**

(*Other than Bugisu Arabica and African estates*)

CURED COFFEE (TONS)

| | | | |
|---|---|---|---|
| 1949 .. | 18,351 | 1955 .. | 60,160 |
| 1950 .. | 26,263 | 1956 .. | 48,498 |
| 1951 .. | 34,362 | 1957 .. | 61,570 |
| 1952 .. | 29,563 | 1958 .. | 65,292 |
| 1953 .. | 26,998 | 1959 .. | 93,261 |
| 1954 .. | 25,196 | | |

(v) *Estate Coffee Production*

37. Production during the 1958/59 season amounted to 7,882 tons of clean Robusta coffee and 401 of clean Arabica. Most of the crop was sold on the Mombasa auctions, the f.a.q. price range being approximately £235 to £160 per ton.

38. The following table shows the quantities and estimated values of coffee sold by estates (excluding associations of growers and co-operatives) during the last 11 seasons:—

**Table D.—Estate Coffee Production (Robusta)**

| Season | Production | Gross Value |
|---|---|---|
| | *Tons* | £ |
| 1948/49 .. | 2,581 | 227,247 |
| 1949/50 .. | 3,060 | 616,363 |
| 1950/51 .. | 3,846 | 940,504 |
| 1951/52 .. | 4,851 | 1,425,669 |
| 1952/53 .. | 5,921 | 1,846,697 |
| 1953/54 .. | 5,277 | 2,100,993 |
| 1954/55 .. | 7,730 | 1,944,790 |
| 1955/56 .. | 8,941 | 2,235,250 |
| 1956/57 .. | 11,010 | 2,587,350 |
| 1957/58 .. | 12,543 | 3,198,465 |
| 1958/59 .. | 7,882 | 1,596,972 |

## (c) Tobacco

(i) *Flue-cured*

39. Production of this type of leaf is confined to West Nile, Acholi and Lango districts in the Northern Province and Kigezi District in the Western Province. The variety grown is Harrison's Special.

40. In West Nile District transplanting started in late March and was completed in July. The early plantings were affected by lack of rain but localised storms in the second half of July improved the condition of the crop in all areas, while the good second rains favoured the growth of the late plantings. Subsequently, however, the quality was lowered by the prolonged wet weather. The total acreage planted was 1,818 compared with 2,176 acres in 1958. Sales of green leaf totalled 8,845,760 pounds whilst co-operative societies (3) and individuals (2) doing their own curing sold 17,247 pounds of graded cured leaf to the East African Tobacco Company. The total production of cured leaf was 756,062 pounds.

41. In the tobacco growing areas of Acholi District which are situated in the high rainfall belt, there was adequate rain for the crop during the main growing period. The planting programme was similar to that in West Nile. A total of 728 acres was planted for green leaf sale to the East African Tobacco Company whilst farmers selling cured leaf planted a further 227 acres. Sales of green leaf amounted to 3,432,022 lb. from which 441,473 lb. of saleable leaf was cured. Sales by independent curers rose to 106,679 lb. compared with 51,584 lb. in 1958. The total crop was 548,352 lb. of cured leaf and the mean yield was 574 lb. per acre. Farmers curing their own leaf numbered 34.

42. In Lango District the members of the Ngai Group Farm who were the sole producers of flue-cured tobacco in the district, planted 22 acres from which they cured 6,720 lb. of graded leaf.

43. The marketing of the 1958 autumn crop was completed in Kigezi District during January and 94,000 lb. of cured leaf were produced. The area of the 1959 spring crop was 230 acres. All plantings were severely affected by drought and yields were exceptionally poor, the total output amounting to only 35,000 lb. of cured leaf. Both crops were purchased by Messrs. Kigezi Industries Ltd., as green leaf, the prices paid, as in other districts, being 12, 8 and 3 cents per pound. Transplanting of the autumn crop started in August and 290 acres were established. With the favourable weather all plantings grew well. A total production of 85,000 lb. is forecast.

44. Full details of production in all districts during 1959 compared with that of the previous year are given below:—

Table E.—Flue-cured Tobacco Production

| Area | Acreage | | Production (Green leaf) | | Production* (Cured leaf) | |
|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| | | | *Tons* | *Tons* | *Tons* | *Tons* |
| West Nile .. | 2,176 | 1,818 | 3,757 | 3,949 | 7 | 8 |
| Acholi .. | 1,295 | 955 | 1,648 | 1,532 | 23 | 48 |
| Lango .. | 11 | 22 | — | — | 1 | 3 |
| Kigezi .. | 517 | 520 | 501† | 498‡ | — | — |
| Total .. | 3,999 | 3,315 | 5,906 | 5,979 | 31 | 59 |

* Cured by individual farmers and co-operatives.
† 1957 autumn and 1958 spring crops.
‡ 1958 autumn and 1959 spring crops.

(ii) *Air-cured*

45. The growing of this crop is now confined to West Nile District, growers in Mubende having changed over completely to fire-cured tobacco production. Heavy Western is the only variety grown.

46. In view of the risk of over-production of this type of leaf no extension of acreage was planned in 1959. In the event the total area planted was estimated at 737 acres compared with 1,415 acres in 1958.

Transplanting was carried out in April/May under favourable conditions and despite subsequent dry spells the crop grew well and yields were high. Particular attention was paid to improving grading and lowering the moisture content of leaf offered for sale at primary markets. Total purchases were 439,549 lb. of cured leaf compared with the record production in 1958 of 968,936 lb. Prices paid to growers were Shs. 1/20cts. and 80 cents for Grades I and II respectively. Details of production in the last two years are given below:—

Table F.—Air-cured Tobacco Production

| Area | Acreage | | Production (Cured leaf) | |
|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 |
| | | | *Tons* | *Tons* |
| West Nile .. | 1,415 | 737 | 433 | 196 |
| Mubende .. | 231 | — | 49 | — |
| Total .. | 1,646 | 737 | 482 | 196 |

(iii) *Fire-cured*

47. In Bunyoro District sowing of nurseries started in February and transplanting in the field took place from April to June. A small increase in the number of growers was reported and the total area planted was estimated at 6,424 acres compared with 5,975 acres in 1958. Dry weather

in June and July checked all planting but the good second rains favoured the late crop. Production was the highest ever, 3,826,856 lb. of cured leaf being sold.

48. In Mubende District, sowing of nurseries and transplanting followed the same pattern as in Bunyoro. The stands of the early plantings were satisfactory but subsequently lack of rain increased seedling losses. The total acreage planted was 1,702 compared with 1,665 acres in the previous year. Total purchases of cured leaf amounted to 645,341 lb. of which only 83,148 lb. was classified as Grade I. The prices paid to the growers, which were the same as in Bunyoro, were Shs. 1/20 cts. and 80 cents per pound for Grades I and II respectively. Details of production for the last two years in both districts are as under:—

**Table G.—Fire-cured Tobacco**

| Area | Acreage | | Production (Cured leaf) | |
|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 |
| | | | *Tons* | *Tons* |
| Bunyoro .. | 5,975 | 6,424 | 1,275 | 1,708 |
| Mubende .. | 1,665 | 1,702 | 355 | 288 |
| Total ... | 7,640 | 8,126 | 1,630 | 1,996 |

(iv) *Development of Overseas Markets*

49. In pursuance of the agreed policy in regard to tobacco production as defined in Sessional Paper No. 15 of 1958/59, preliminary steps were taken to establish an export market for fire- and air-cured leaf surplus to local manufacturing requirements.

50. A leaf expert from the firm of Messrs. Edwards, Goodwin and Company (Overseas) Limited was posted to Mubende to advise growers and field staff on the steps necessary to raise leaf quality to the standard required by overseas buyers. The use of the old temporary markets was discontinued and buying took place at four ginneries, the buying, picking-over and storage buildings being utilised for the purpose. The reduction in the number of markets was offset as far as sellers were concerned by greatly increased "kyalo" transport. Intensive propaganda was undertaken to explain to growers what was required and large numbers of leaflets were distributed. Buying of the crop was undertaken by Messrs. Edwards, Goodwin as the agents of the East African Tobacco Company and only buyers with experience of tobacco marketing overseas were employed. Messrs. Edwards, Goodwin also became Government selling agents in respect of leaf exported, it having been agreed with the East African Tobacco Company that up to 100,000 lb. could be exported from the 1959 crop if the improvement in quality made this possible. Excellent progress was made in reducing the moisture content of all purchases, the average

being a little over 20 per cent compared with 28 per cent in the previous season. Only limited progress was, however, made in improving grade and it soon became apparent that it would be possible to export limited quantities only. In view of this an attempt was made to select leaf in other tobacco areas. The following amounts of selected leaf were exported under the terms of the agreement between Edwards, Goodwin and Government:—

| | |
|---|---|
| Mubende | 2,400 lb. (unstripped) |
| West Nile | 8,006 lb. (stripped) |

In addition, with the agreement of Government, 203,046 lb. of unselected leaf from the normal run of stocks of Grade I leaf held by the East African Tobacco Company were exported by Messrs. Edwards, Goodwin. At the time of writing no details are available concerning the progress made in selling the tobacco exported.

### (*d*) Oil Seeds

51. The output of seed from the 1958/59 cotton crop was 146,467 tons of which 125,389 tons were sold to local oil millers or exporters. Prices averaged Shs. 336/53cts. per ton. Planting accounted for 20,593 tons and 485 tons were used as fuel.

52. The marketable surplus of groundnuts in the Eastern Province was estimated at 9,000 tons of shelled nuts compared with 16,300 tons in 1958. As statutory control was not exercised in the marketing of the crop, precise figures of the amount sold are not available.

53. Production of sunflower seed increased in West Nile District, the crop amounting to nearly 400 tons compared with 193 tons in 1958. Quality was, however, not as high as in the previous season.

### (*e*) Maize

54. There was an increase of approximately 20,000 acres in the area under maize in Buganda and a slight fall in planting in the Eastern Province. The poor spring rains reduced the yields of the early sowings in the main producing areas. Considerable quantities were consumed in the green state, and the marketable surplus was small, it being estimated that only 20,000 tons were sold; but in the absence of any statutory obligations on buyers to submit records there is no means of knowing whether in fact this surplus was marketed.

### (*f*) Tea

55. At the end of 1958 the total area of planted tea was 14,917 acres. During 1959 the net increase in licensed acres was 569 acres, bringing the total area licensed at the end of the year to 27,377 acres. Production amounted to 9,753,473 lb. of made tea compared with 8,264,887 lb. in 1958 and was the highest on record.

### (*g*) Sugar

56. A total of 20,260 acres of mature cane was harvested and sugar production from the two estates amounted to 81,075 tons, compared with the previous record production of 80,889 tons in 1958. Exports to Kenya and Tanganyika were 13,710 tons compared with 23,056 tons in 1958.

### (*h*) Cocoa

57. The issue of seedlings to selected African farmers in the more fertile areas of Buganda continued and the total acreage of new plantings now totals 100 acres. Trial plots were established in other areas of the Protectorate thought to be suitable for cocoa, but development of the crop in these areas will not be undertaken until the results of the trials are known. During the year seed of the Amelonado type was obtained from the Belgian Congo, and it is estimated that sufficient seedlings will be produced from this seed to plant 75 acres in 1960.

### (*i*) Sisal

58. Exports of sisal from the one estate near Masindi in the Western Province were 580 tons compared with 394 tons in 1958.

## V. AGRICULTURAL DEVELOPMENT AND EXTENSION WORK

### (*a*) Soil Conservation

59. Despite preoccupation with the production drive, field staff of the Department devoted a large proportion of their time to the encouragement of the proper conservation of both cultivated and grazing land. As in previous years, progress was not spectacular but the general standard achieved, particularly in the more densely populated areas, is encouraging as far as cultivated lands are concerned. A good deal, however, remains to be done in the control of burning and grazing of communally-owned grassland.

60. In Buganda the Natural Resources Competitions acted as a stimulus to paspalum bunding, and increased attention was paid to the closing of over-grazed areas where interest was taken in this work by chiefs. In the Eastern Province good progress in grass bunding was reported from Bugisu District particularly on Mount Elgon. In Teso District the high standard of soil protection was well maintained and grass wash-stops are the rule rather than the exception—a state of affairs readily seen from the air. In the Western Province the general level of protection of arable land is considered adequate and in parts, notably the Kigezi highlands, is extremely high. The use of communal grazing grounds, however, gives cause for serious concern in many parts or the province and

despite determined efforts by the field staff to control burning, progress was disappointing. In Karamoja in the Northern Province, little progress was made in combating the serious problem of over-grazing, soil deterioration and bush encroachment. Elsewhere in the Province, with local exceptions, soil conservation measures were well maintained.

### (*b*) Agricultural Education

(i) *Main Farm Institutes*

61. The two main farm institutes at Bukalasa and Arapai each provide a two-year course of basic agricultural training with a practical bias, but teaching sufficient theory to enable students to appreciate the reasons for agricultural practices. The training is essentially designed to provide a sound knowledge of farming and stresses that farming is a business requiring managerial skill. A third year's specialist departmental training course is provided for students wishing to join the Department.

62. Both institutes had a successful year. At Bukalasa, which started one year ahead of Arapai, the first group of students completed their three-year course of instruction and 25 were selected to join the field and research divisions of the Department. Second-year men numbered 39, of whom 38 successfully completed the course of basic agricultural training. Twenty-three students were accepted for the third-year course in specialist agricultural training and 11 for training as veterinary assistants at the Veterinary Training Institute at Old Entebbe. The number of new entrants at the beginning of the year was a record and of the 73 students accepted, 24 were holders of the school leaving certificate.

63. Arapai Farm Institute began its second academic year in February with 51 new entrants and 34 second-year men; of the latter 33 were successful in their examinations at the end of the year. His Excellency the Governor formally opened the Institute on 14th December and also presented the prizes and certificates awarded to students on completion of their basic training. In the course of the year arrangements were completed for the Institute to start the third-year course of specialist training for agricultural students, in early 1961.

64. It is planned to extend the present courses of instruction to women at both institutes and the first of two women agricultural officers, who will be in charge of women's education, took up her appointment in September.

(ii) *District Farm Institutes*

65. At the end of the year the first district farm institute at Ngetta in the Northern Province was ready for use whilst three other institutes, one in each of the three remaining provinces, were nearing completion. Development of the farms of all four institutions was started and the first course will begin in 1960.

(iii) *Farm Schools*

66. The total number of farm schools in the Protectorate is eight, of which six (including a small institution in Karamoja) are in the Northern Province and two in the Eastern Province. All schools provide a two-year post-primary course for boys who wish to take up farming as a career. In Acholi the two farm schools near Gulu were well run and 31 students completed their training. The Aler Farm School in Lango had a less successful year than usual owing to failure to obtain a successor to the first Principal who had contributed so much to the efficient running of the school. The smaller farm schools situated at Koboko and Moyo in West Nile District and Kaabong in Karamoja all made satisfactory progress. Nine students left Koboko at the end of the year to establish their own holdings. In the Eastern Province, Amucu Farm School experienced a disappointing year, work being interrupted by several strikes of students. The school has now been reorganised and it is intended in future to select older students for training. In Busoga District the Muljibhai Madhvani Farm School at Wairaka had a very successful year, 20 students passing their final examinations.

(iv) *General*

67. At Bukalasa ten two-week courses for chiefs and farmers were attended by 270 people of whom 75 were women. In addition, two short courses for women's clubs were arranged at Bukalasa and Namyoya. Both these courses were well attended and the keenness shown was most encouraging. With the appointment of Field Officer (Woman) it is hoped to increase the number and scope of the courses in 1960. As in previous years short courses for chiefs and farmers in the Northern, Eastern and Western Provinces were organised in the districts together with refresher courses for departmental staff. In the Northern Province considerable success was again achieved with demonstrations on the holdings of leading farmers. Agricultural competitions, embodying all aspects of good farming, were held in the majority of the districts. Regular lectures on agricultural subjects were delivered by members of the Department at Nsamizi Training Centre.

### (*c*) Animal Husbandry and Pasture Work

68. Departmental policy aims, in areas where it is appropriate, at the integration of crops and stock in a balanced system of mixed farming. As this policy cuts across traditional practices whereby crops and stock are kept entirely separate, and cattle herded communally, progress is necessarily slow. Moreover, the first step towards better animal management, that of land enclosure, is expensive. There is, however, evidence of an increase in individual herding and each year the amount of land enclosed, chiefly by live hedges, increases, whilst in some areas farmers have begun to improve their pastures and to sow fodder crops. During the year a start was made in the Bugisu lowlands in fencing land with live hedges and

digging out *Cymbopogon afronardus*. In Bukedi District a number of Bahima herdsmen hitherto in charge of communal herds were dismissed and the cattle brought on to the individual farms. In addition, several covered kraals were built and a few farmers planted elephant grass as a fodder crop. In the Western Province enclosure of land continued on a large scale in Kigezi District and 130 land titles were granted. Elsewhere in the province enclosure was carried out by a few progressive farmers. In the Northern Province there were few new developments but in Buganda further paddocking of small areas of land was carried out by stockowners.

69. Great interest was aroused amongst farmers by the introduction, in co-operation with the Veterinary Department, of high grade Guernsey cattle (in-calf heifers) from Kenya to two planned farms in Buganda. The cattle settled down in their new environment quickly and have yielded between two and three gallons of milk daily since calving.

### (*d*) Irrigation and Swamp Reclamation

70. In co-operation with the Water Development Department, investigational work was undertaken on three irrigation schemes at Nyakatonzi in Toro District, Namalu in Karamoja District and in the Oruchinga Valley in Ankole District.

71. At Nyakatonzi the trials on cotton and sugar gave encouraging results. The average yield of ungraded cotton was 2,123 pounds per acre. Damage by cotton stainers was, however, high and 12 per cent of the seed cotton was classified as stained. The sugarcane yields in tons of cane per acre averaged, according to variety, from 69·8 tons (variety C.0421) to 40·2 tons (variety M.134/32).

72. In the Namalu area at the south-western foot of Mount Debasien, plans were drawn up for a settlement scheme in which crops will be grown under irrigation, using water obtained from a newly-constructed river dam. Work was started on an experimental irrigation plot of ten acres in which a full range of food and cash crops will be grown. Planned settlement and development of the area will start when the results of the trials are known. The old irrigation scheme, situated on the same river, was maintained as in previous years and may eventually be incorporated in the settlement area.

73. The Oruchinga Irrigation Scheme was also started with settlement in view after existing water supplies had been found to be inadequate for the purpose. Experimental plots were laid down to establish what food and cash crops could be grown economically under irrigation. The area was selected for settlement with a view to eliminating tsetse fly and halting the movement of the fly from the south.

74. On the Kakira Sugar Estate in Busoga District the area of sugarcane irrigated by the sprinkler method was increased by 1,500 acres. This development was undertaken as a result of irrigation trials carried out by the estate from 1956 onwards. Yield increases of the order of 30 per cent are expected.

75. In the heavily populated areas of Kigezi District no additional swamp reclamation was undertaken during the year as existing drained swamps had not been fully utilised, owing to lack of interest by the local people. Towards the end of the year, however, there were signs of a change of heart and 150 applications for plots in the Kiruruma Swamp were made.

76. Swamp fringes and valley bottoms in many parts of the Protectorate were utilised for dry-season planting of sweet potatoes, chiefly for providing planting material in the early rains; to a lesser extent other crops such as maize and beans were planted.

### (*e*) Resettlement

77. During the year there were nine resettlement schemes in operation in the Western Province, located as under: —

Kigezi District—Rwanga, Kihihi, Bwambarra.

Ankole District—Bigyera, Oruchinga, Chezo, Kisharira.

Toro District—Bigodi, Nkongora.

The most successful area was Bigyera where little land remained for settlement at the end of the year and plans were made for a new area to be utilised. In the Oruchinga Valley owing to lack of water supplies settlement was suspended pending the findings of an experimental irrigation scheme. There was only a small increase in the number of settlers in Chezo and Kisharira. In the north Kigezi District resettlement areas 619 families comprising 3,504 persons were in residence at the end of the year.

78. In Bigyera, Bigodi and Nkongora and all the north Kigezi areas strict control was exercised over demarcation of holdings to ensure orderly settlement and land development. Lack of rain caused difficulty with food in the first half of the year but supplies became plentiful during the second rains. Flue-cured tobacco yields were poor in the first rains in north Kigezi but the second crop did well. Both cotton and Robusta coffee continued to do well in Bigyera and Bigodi and over 40,000 seedlings of the latter crop were issued to settlers.

79. The south Busoga resettlement area made excellent progress, 531 families taking up holdings during the year compared with 26 in 1958. Each new settler was given a simple development plan for his holding which he was required to follow.

### (*f*) Kigumba Settlement Area

80. By the end of the year 390 demarcated holdings had been occupied compared with 298 at the end of 1958. The majority of new settlers were Maragoli from the Nyanza Province of Kenya who worked well in developing their holdings. In the 1958/59 season the area of cotton cultivated by settlers rose to 519 acres compared with 134 in the previous season. The average yield of good raw cotton was 860 lb. per acre. Newcomers received the normal inducement of rations for the first six months of residence; apart from this the settlement was entirely self-supporting in food.

### (*g*) Liaison with African Local Governments

81. In general the senior officials of the African local governments and chiefs co-operated closely with members of the field staff of the Department in the drive to increase production and introduce new methods. In Buganda the Minister of Natural Resources in the Buganda Government toured extensively in connection with the early planting of cotton and the improvement of the quality of fire-cured tobacco. During the year a bye-law for the control of grass burning was passed by the Eishengyero of Ankole giving chiefs powers to regulate burning thereby reducing the risk of erosion and improving communal pastures. The Kigezi District Coffee Production Bye-law enacted during the year is designed to ensure the proper development of coffee growing which is being expanded in the district. In the same district the drafting of a soil and water conservation bye-law was still under consideration as also were bye-laws to promote the adoption of improved agricultural practices in Toro and Bunyoro districts.

### (*h*) Mechanical Cultivation

(i) *Policy*

82. The policy for the development of mechanical cultivation continued to be that the Department must, through its Special Development Section, lead the way with the Contract Hire Service, and move to the new areas when farmers themselves or other organisations are capable of operating their own equipment.

(ii) *Contract Hire Service*

83. Tractor units were maintained at centres in Buganda Province and in Bunyoro, Acholi, Lango and Toro districts as in 1958. One new centre was started in Buruli County in Buganda. The total area cultivated was 6,420 acres compared with 7,753 in 1958. The main fall in demand took place in Acholi and Toro districts. In Acholi District the decrease was attributed to the increase in the number of privately-owned tractors, whilst in Toro District the main factor was considered to be a local firm contracting to plough large acreages on a deferred payment system and at the last moment failing to fulfil its contracts: a contributory factor was the fall in cotton prices. Comparative figures of acreages cultivated at all centres in 1958 and 1959 are given below:—

| Province or District | Ploughing | | Discing | | Planting | | Weeding and Ridging | |
|---|---|---|---|---|---|---|---|---|
| | *1959* | *1958* | *1959* | *1958* | *1959* | *1958* | *1959* | *1958* |
| Buganda .. .. | 604 | 610 | 85 | 15 | 8 | 20 | — | — |
| Bunyoro .. .. | 685 | 681 | — | — | — | — | — | — |
| Toro .. .. | 367 | 1,065 | 348 | 1,049 | 94 | 12 | 8 | — |
| Acholi .. .. | 1,770 | 2,500 | 493 | 335 | 24 | 55 | 112 | 178 |
| Lango .. .. | 1,292 | 1,017 | 98 | 46 | — | — | — | — |
| Busoga .. .. | 218 | 167 | — | — | — | — | — | — |
| Masaka .. .. | — | — | — | — | — | — | 308 | * |
| TOTAL .. | 4,936 | 6,040 | 1,024 | 1,445 | 126 | 87 | 428 | 178 |

* Details not available.

84. A total of 41 tractors and their ancillary equipment worked of which ten were Ferguson T.E.A.20 (petrol); eight Massey-Ferguson 35, ten Farmall B.E.M., six Fordson Major and six Fordson Dexta. The Massey-Ferguson 35 tractors will gradually replace the Ferguson T.E.A. The average number of hours worked per tractor was 435 which indicated that less than half the cultivating potential of the units was utilised. The average running costs worked out at Shs. 22/97cts. per hour. The total revenue earned was Shs. 284,943 compared with Shs. 339,000 in 1958. Hire rates were unchanged, the cost per acre in Acholi, Lango and Teso districts being Shs. 45 per acre for ploughing and Shs. 25 for discing. In Buganda Province and Busoga and Bunyoro districts, charges were on a sliding scale according to the size of the plot cultivated.

(iii) *Purchase of Tractors by Farmers*

85. Individuals, farmers' groups, and co-operatives, possessing the necessary resources and experience were encouraged to purchase their tractors and equipment. Sixteen new tractors were purchased during the year of which seven were in Buganda, six in Acholi, one in Lango and two in the Western Province. Advice and assistance with maintenance work and repairs were given by members of the Special Development Section to tractor owners in their areas.

(iv) *Investigational Farms*

86. Senge Farm was run as a mechanised farming unit to test whether a single tractor can be operated economically on a 40-acre farm.

87. Kigumba Farm in Bunyoro District was again run by the Special Development Section for the multiplication of pedigree cotton seed. The farm receives seed from the Cotton Research Station, Namulonge, and maximum multiplication is secured by taking full advantage of all available mechanised farming techniques. In the 1958/59 season the average yield of ungraded cotton was 1,063 lb. 160 acres of cotton were planted between the middle of May and the middle of June. The crop made excellent growth and high yields are expected. The herd of beef cattle was maintained in accordance with the policy to work out a balanced farming system utilising mechanisation to the fullest extent economically possible.

(v) *Machinery Testing and Development*

88. Close liaison was maintained with the East African Implement and Tractor Testing Unit whose headquarters are at Nakuru in Kenya. The extended farm trial of four tractors (Fordson Major diesel, Nuffield D.M.4, Ferguson F.E.35 diesel and Ferguson F.E.35 petrol) started in 1957 was continued. The experimental modifications of the radiator air intake of the Fordson Major and extra fuel filtration proved so successful in the trial that three further Fordson Majors of the Special Development Section were similarly modified. The trial which is scheduled to last 2,000 working hours will end in 1960.

89. Other experiments undertaken by the Special Development Section in testing, modification and fabrication of equipment included the following:—

(*a*) Development of experimental dry and wet coffee processing units in consultation with the Officer-in-Charge, Robusta Coffee Research Station, Kituza;

(*b*) testing of two-wheeled tractors and mechanised cultivators suitable for use in the Robusta coffee areas;

(*c*) development of a prototype of a hand seeder capable of sowing a wide range of crops including cotton;

(*d*) modification of ox-weeders to permit of late weeding of cotton.

### (vi) *Tractor Training School*

90. Two two-month courses were held at Namalere Tractor Training School each of which was attended by the full complement of 12 students. Those attending were mainly progressive farmers and their sons and were drawn from all areas of the Protectorate where the Contract Hire Service operates. A third course was arranged for the purpose of instructing the Special Development Section staff in the operation and maintenance of diesel tractors. In the course of the year arrangements were made for the scope of the courses to be extended to include small tractors.

### (*i*) Ox-drawn Equipment

91. It is the policy of the Department to encourage the use of ox-drawn equipment in the new areas and, at the same time, to widen the range of equipment used. Special attention is being paid to the use of inter-row cultivators which are at present little used in areas where the ox-plough is firmly established.

92. In the Western Province few farmers could be interested in ox-ploughing. Most progress was made in the Ankole District where training of oxen was undertaken by the Veterinary Department. Prospects of achieving a rapid increase in the use of ox-drawn equipment in this district are not, however, high in view of the popular belief that a draught-ox is unsuitable for slaughter or dowry purposes. The most striking progress in the development of ox-drawn equipment was made in Teso District in the Eastern Province where extensive use is already made of ox-ploughs. It is estimated that the number of ox-weeders in use rose to 300 compared with 100 in 1958. In addition locally manufactured ox-carts attracted considerable interest and 70 were sold. In Busoga District where little use has been made of draught-oxen in the past, demonstrations were staged of a full range of implements but the main work was establishing ox-training facilities. Two centres were started and 80 oxen trained and sold to farmers during the year. Elsewhere in the province progress was slower but as a result of the work of demonstration teams on prison farms several leading farmers purchased implements.

93. Ox demonstration teams continued to operate at Ngetta Farm in Lango District and although great interest was shown few ox-weeders were bought by farmers. In order to assist this development the Lango African Local Government arranged through the African Loans Fund for loans to be made available to farmers and £3,000 was set aside for this purpose. In other districts in the Northern Province there was little progress apart from a small increase in the number of ploughs in Acholi District.

94. In Buganda very little interest was shown by the farmers in training draught-oxen despite the regular use of ploughs and weeders on minor experiment stations throughout the Province.

### (*j*) Farm Planning

95. During the year the two farm planning units in Buganda and the Eastern Province continued to operate. No work was carried out in the Northern Province, apart from the planning of Government farms. In the Western Province, further progress was made with improved farm layouts in Kigezi District, but progress was much slower than in 1958. A start was made with the planning of holdings in the Kigumba Settlement Area. The total number of planned farms rose to 22 and 11 in the Eastern Province and Buganda, respectively, and a further 23 farms were surveyed prior to detailed planning.

96. In those areas where annual crops predominate the main improved methods incorporated into the farming systems have been spraying against cotton pests, training of oxen, introduction of row-cropping and inter-row weeding, paddocking and use of farmyard manure. In Buganda, where the economy is based chiefly on perennial crops, emphasis has been placed on improving the yields of coffee and bananas, better crop processing, integration of cattle into the farming system and extension of crop acreage on a rational basis. Proper soil conservation measures are incorporated in all farm layouts.

97. The interest shown by farmers in the service has been most encouraging and far more applications have been received than it has been possible for existing staff to deal with. The keeping of farm records, whilst being of great assistance to the individual farmer in running his farm, has yielded much information on the economics and practices of peasant agriculture, hitherto unavailable and which can now be utilised, in future planning. In a few cases there was evidence of material development outstripping managerial skill. All experience points to the need to hasten slowly so that full advantage may be taken of data obtained from existing planned farms to ensure that only practices of proven economic value are advocated and that the managerial skill of the planned farmer is not over-taxed.

98. Details of farms planned and surveys made prior to planning, by districts, are given below:—

| District | African Farms | | Government Institutions |
|---|---|---|---|
| | Planned | Surveyed | Surveyed and/or planned |
| Mengo .. .. | 6 | 8 | 12 |
| Masaka .. .. | 3 | 1 | |
| Mubende .. .. | 2 | — | |
| Teso .. .. | 6 | 3 | 7 |
| Bugisu .. .. | 7 | 6 | — |
| Bukedi .. .. | 5 | 3 | 2 |
| Busoga .. .. | 4 | 2 | 2 |
| Lango .. .. | — | — | 3 |
| Total .. | 33 | 23 | 26 |

## VI. INVESTIGATIONS

### (*a*) Soils and Natural Vegetation

(i) *Soils and Vegetation Surveys*

99. Field work was completed before the end of the year. Reports on the surveys in the Eastern Province have been finished and distributed; those for Buganda and the Northern Province are with the binders.

(ii) *Soil and Plant Chemistry*

100. Soil analyses for the soil surveys were given priority and only the samples from the Western Province remain to be examined.

101. Studies have been resumed of the phenomenon of nitrate accumulation in the soil and the work on nitrogen uptake in Robusta coffee seedlings has been continued.

102. The flame spectrograph has been successfully adapted to routine spark work to permit the more accurate and quicker determination of trace elements, especially magnesium.

(iii) *Soil Amendments—Fertilisers*

103. During the year five fertiliser experiments on coffee, including one of growth substance sprays, were started. At Kituza Research Station responses of coffee to nitrogenous fertilisers have been economic.

104. Fourteen permanent factorial experiments on annual crops were started in Buganda and the Western Province to investigate the effects of nitrogen, sulphur, phosphate, magnesium, potash, and farmyard manure under a rotation of continuous cropping. Few results are to hand but responses seem to be small and nitrogen may be the main requirement. Small experiments at Kawanda include an observation trial on elephant grass leys in which ammonium sulphate and superphosphate appeared to give improved growth while potash and magnesium are apparently needed.

105. A small trial to observe the effects of various weed-killers on *Oxalis triloba* indicated that simazin and maleic hydrazide had little effect while some degree of control was achieved with aminotriazole, ammate or monuron.

*Serere Investigations*

106. Field work on inorganic fertilisers was continued with detailed experiments at Serere itself, at prison farms in Bukedi and at Labora near Gulu. In addition, large numbers of simple paired plot trials were carried out in Teso, Bukedi and north Busoga districts, on finger millet, groundnuts and cotton. The results from the detailed experiments have not been fully calculated but although some worthwhile differences have been found in several cases, results have in general been disappointing.

107. In trials on farmers' land, an application of only 98 lb. per acre of sulphate of ammonia when the finger millet crop was six inches high gave very worthwhile responses. At Bugusege the trial with sulphate of ammonia commenced in 1956 on very old coffee, has shown remarkable increases in parchment production at all levels of application of the fertiliser. Yields are very much higher than previously and a 50 per cent increase with an application of 80 lb. nitrogen was found on a basic yield level of 1,200 lb. of parchment per acre.

(*b*) Annual and Medium-Term Crops (Botanical Investigations)

(i) *Maize*

108. Up to the present the following varieties derived from local material have been bred:—

K8/58—First synthetic by recurrent selection with K8.

KM/54—First synthetic by recurrent selection with Muratha.

KM/57—Second synthetic by recurrent selection within Muratha.

109. Although KM/57 is earlier than KM/54 this gain has been achieved at the expense of yield. As the yield of KM/57 is no better than the parent Muratha this variety will be abandoned. K8/58 has yielded well in the variety trials and it should be useful where early maturity is of importance.

110. In order to produce polysora rust-resistant varieties the following crosses with foreign material were made:—

24 RRM/56—AFRO 24 x Muratha.

5354 RRM/58—AFRO 29 x Katumbili x Muratha.

5314 RRM/58—AFRO 29 x Katumbili x Muratha.

24 RRK/58—AFRO 24 x K8.

29 RRK/58—AFRO 29 x K8.

111. These hybrids were originally made to obtain polysora rust resistance and they are all homozygous for resistance to race E.A.1. Selections for other desirable characters were also made. The best progenies derived from these hybrids have been bulked and multiplied and will be compared in district variety trials in 1960.

(ii) *Castor Oil Seed*

112. Four varieties were imported from Tanganyika including two dwarf types and these were sown in variety trials at Kawanda and three centres in Ankole District to compare their performance with a local variety. The trial at Kawanda has already shown that there, the dwarf types are entirely unsuitable. One of the tall varieties, Kilosa Giant, looks more promising but it is possible that this early promise will not be maintained because ravages of insect pests have considerably reduced the yield of unblemished seed. The more recent appearance of *Sclerotinia ricini* (a new record for Uganda) is also threatening this variety.

(*c*) Annual and Medium-Term Crops (Entomological Investigations)

(i) *Cotton*

113. A detailed investigation of the biology of spiny boll-worm (*Earias* spp.) was begun. An exhaustive analysis of previous work, including the single-line trials at Serere in 1953/54 to 1955/56, leave no doubt that boll-worms, of which *Earias* is the most important, are by far the major pest of cotton at least under Serere conditions. Work to date at Kawanda shows that *Earias* has two main peaks of emergence corresponding roughly with the June/July planting season and the boll-setting period in October/November.

114. At Serere two major spraying experiments were conducted to follow up similar experiments done in 1958. The treatments on the first were: spraying four times with one pound of D.D.T. per acre per application, commencing at first bud, eight weeks from emergence and first flower, versus no spray applied to May, June and July plantings, respectively. The results are striking and recorded in the following table:—

*Yields of Seed Cotton in Pounds per Acre*

| | Planting Date | | |
|---|---|---|---|
| *Spraying commenced at—* | *May* | *June* | *July* |
| First bud .. .. | .. 1,172 | 946 | 552 |
| 8 weeks .. .. | .. 1,133 | 1,070 | 508 |
| First flower .. .. | .. 1,132 | 992 | 534 |
| No spray .. .. | .. 878 | 604 | 324 |

115. The second experiment on May-planted cotton was a repeat on the frequency of application experiment, four sprays at ten-day intervals, three at 15 days, two at 20 days and an unsprayed control, all treatment

commencing eight weeks from emergence, at one pound of D.D.T. per acre per application. The results so far obtained from this experiment are a satisfactory confirmation of the recommendation to commence spraying at eight weeks from emergence and to spray four times at 10-day intervals.

116. It has been shown at Serere that the tea mite (*Hemitarsonemus latus*) is controlled by the normal D.D.T. spraying. No convincing evidence of yield loss was obtained and it appears that, at least at present, tea mite is not a serious pest of cotton in Uganda. Red spider mite (of the *Tetranychus telarius* complex) was more than usually prevalent but no relationship with spraying was evident.

(ii) *Stored Products Research*

117. Experiments into the control of bean pests are in progress using three varieties Mutike, Banja and Canadian Wonder. The first two are very susceptible to bruchid attack but the last appears to have considerable resistance. Irrespective of variety, damage to beans treated with 0·04 per cent gamma B.H.C. to the level of 1 p.p.m. of the dried beans is very slight.

118. Fumigation experiments on maize stacks using methyl bromide have been carried out in co-operation with the Empire Cotton Growing Corporation at Namulonge. One stack was covered with a large americani bag before treatment and on another, a large polythene sheet was left *in situ* after treatment to try and prevent reinfestation from outside. After five months, control still appears to be complete.

119. A trial using a plywood silo for maize is also in progress but several disadvantages have become apparent which may limit the use of such silos under Uganda conditions.

(iii) *Machinery*

120. Two large-scale trials of the "Conomist" air-blast sprayer were carried out in co-operation with the Special Development Section, one in the Western Province under almost ideal conditions and one in the Northern Province under very difficult conditions. In both these trials an adequate level of insect control was achieved.

121. The use of a more efficient pump mounted on a water trailer enables the sprayer to be recharged in three minutes. This has meant a considerable saving in time when the "Conomist" is at work.

122. Trials with the "Motoblo" sprayer conducted in Eastern and Western Provinces resulted in the introduction of numerous modifications which have improved performance and eased maintenance. Comparative trials are being undertaken to evaluate four other types of motorised knapsack sprayers. Improvement was also effected in the design of the long-boom sprayer used for large-scale cotton experiments, and it is now possible accurately to spray an acre of experimental cotton in three-and-a-half minutes.

123. Minor workshop investigations have produced a ratchet feed device for a micro-syringe used in toxicity work which eliminates backlash; an instantaneous control, low volume, variable spray lance for special type tree spraying; a multi-purpose sprayer for lantana control and a high pressure, high volume coffee spray trailer unit.

124. As a result of the successful development of *Antestiopsis* control techniques based on the use of "Motoblo" sprayers, a full-time self-contained mobile coffee spraying unit was set up in Ankole District, and this has proved to be a major step towards the efficient control of pests and diseases in widely scattered plots of peasant Arabica coffee. Similar teams have operated successfully on the much more difficult terrain of Mount Elgon in Bugisu District.

(iv) *Miscellaneous*

125. The Kawanda insect collection has continued to increase rapidly, particularly notable accessions being type material of many species of Miridae. The light trap continues to produce much of interest and requests are being received for various special groups of insects from these collections. Occasional swarms of desert locust were recorded from Northern Uganda between April and June, being most frequent in the latter month. No damage to crops was reported. Collection of data on insect incidence on castor oil plants continued.

126. Collections of insects from cacao have been done, mainly of various scales and mealy bugs. Severe defoliation of *Sesbania* shade trees and the cacao beneath has been reported and a control suggested. It has been demonstrated in the laboratory that *Erias* larvae can cause serious damage to seedlings and even death by ring barking.

### (*d*) Perennial Crops (Coffee Research Unit)

(i) *Coffee Pathology*

127. A full programme of coffee pathology was undertaken during 1959. Epidemiological studies of rust infection of Arabica are being intensified, and a new sampling method was devised to measure the intensity of rust attack in the field.

128. The selection of host varieties suitable for the differentiation of the races of *Hemileia vastatrix* was carried out. An Arabica variety trial at 6,200 feet in north Bugisu District was uprooted on the diagnosis of the first confirmed incidence of coffee berry disease in Uganda.

129. The major pathological project on Robusta coffee was the study of a hitherto undescribed fungal disease which has caused increasing concern since 1953. Spread is slow but the foci of infection are numerous and widespread. Starting as red blisters on the green berries severe infection causes heavy abscission and a total loss of crop.

(ii) *Coffee Pests*

130. The main investigation has been into the biology of coffee lace-bug (*Habrochila* spp.) consequent on the severe outbreaks in Bugisu District during 1959. At least two species of *Habrochila* are found on coffee in Uganda with possibly montane races of one species. *Placida* Harv. is confined to Robusta coffee and appears to cause little damage. *Ghesquierei* Schout is found almost exclusively on Arabica coffee, and was the species responsible for the damage in Bugisu. It is in *ghesquierei* that there is some evidence of the existence of montane races and populations of this species from Kawanda (lowland) and Ruwenzori and Mount Elgon are now being intensively studied.

(iii) *Development of Cacao Growing. New Planting of African-grown Cacao*

131. New planting of African-grown cacao now amounts to about 100 acres. These are all of seedlings of the Trinitario type of seed harvested from plots planted over 40 years ago which are still producing good crops. During 1959, seed of the Amelonado type was obtained from the Belgian Congo and sufficient seedlings have been raised by the Department to plant 75 acres. In addition, seedlings for more than 100 acres have been grown by the non-African estates.

132. The Upper Amazon selections obtained from Ghana and planted at the Coffee Research Station, Kituza, have produced their maiden crop this year. Some of these selections are most promising, giving as many as 40 pods per tree in their first crop.

### (*e*) Farming

(i) *Kawanda Farm*

133. The past year has seen much progress in clearing the farm of "lumbugu" (*Digitaria scalarum*). Even if the weed has not been completely eradicated it is now at a stage where it can easily be controlled. The effect of this cleaning-up and also of better cultural methods is reflected in both crop and animal yields. The fertility level of the whole farm is still low and work has continued in order to raise this by regenerative grass rests, green and farmyard manures, soil and water conservation. A system of elephant grass management has been evolved which fits in with the Kawanda requirements and a detailed elephant grass experimental programme has been started to see if further improved management practices can be adopted. The Mayanja swamp has now been drained and is providing useful dry-season keep.

134. There was much less rain than usual, 39·72 inches being recorded compared with 45·13 inches, averaged over a 24-year period. The distribution was far from ideal for crop production with intense dry periods in January and February, and also in June and July, which affected the planting of all crops.

PLATE I. Official opening of Arapai Farm Institute by His Excellency the Governor
[*Photograph by Department of Information*]

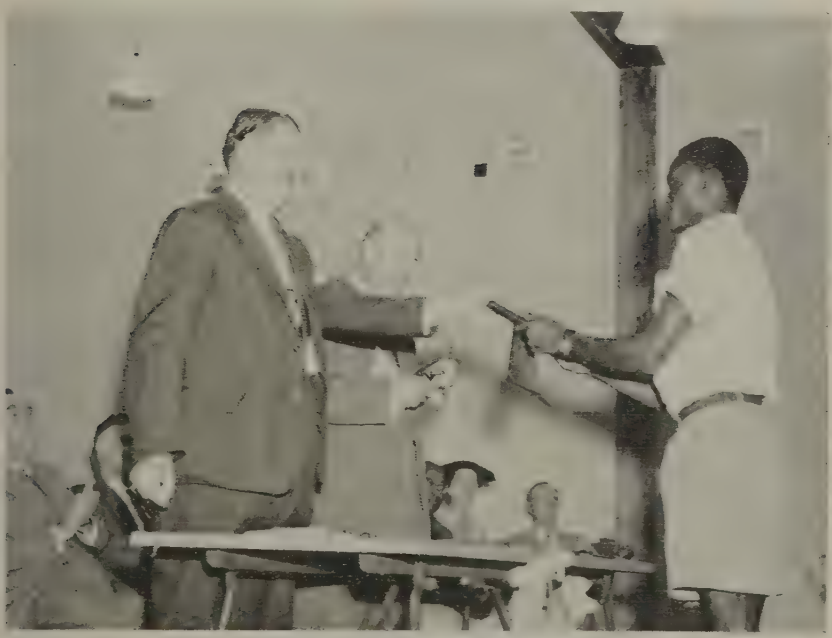

PLATE II. Prize-giving, Bukalasa Farm Institute, 1959
[*Photograph by Department of Information*]

PLATE III. Y.W.C.A. class attending a practical demonstration at Namyoya
[*Photograph by M. F. Merchant*]

PLATE IV. Y.W.C.A. practical class at Bukalasa Farm Institute
[*Photograph by M. F. Merchant*]

PLATE V. Ox-weeding cotton in Teso District
[*Photograph by D. J. Parsons*]

PLATE VI. Planet Junior Cultivator fitted with shields to permit late weeding of cotton [*Photograph by D. J. Parsons*]

PLATE VII. Landmaster two-wheeled tractor under trial by Special Development Section
[*Photograph by M. F. Merchant*]

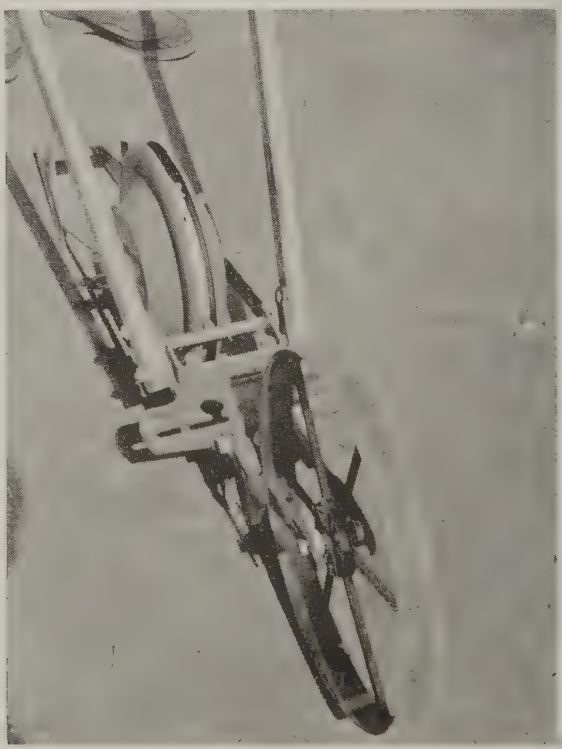

PLATE VIII. Production prototype of hand seeder developed by the Special Development Section in conjunction with Messrs. Bentalls, Ltd.
[*Photograph by M. F. Merchant*]

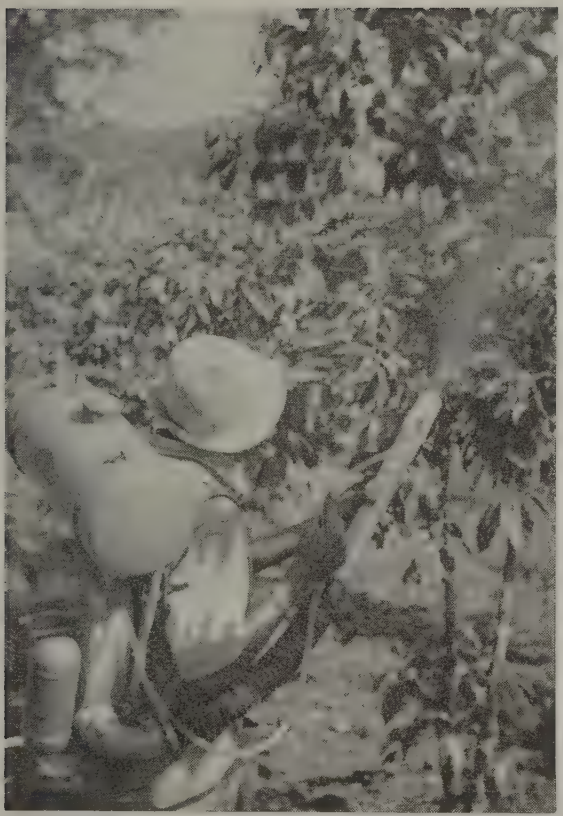

PLATE IX. Spraying Arabica coffee against Antestia in Bugisu District [*Photograph by K. E. Woodcock*]

PLATE X. Upper Amazon cocoa, 3½ years from seed [*Photograph by Department of Information*]

PLATE XI. Departmental stand, Teso District Show, 1959
[*Photograph by Department of Information*]

PLATE XII. Departmental stand, Teso District Show, 1959
[*Photograph by Department of Information*]

PLATE XIII. Miniature tobacco barn for flue curing in Acholi District
*[Photograph by D. J. Parsons]*

PLATE XIV. A privately-owned tractor in Acholi District
*[Photograph by M. F. Merchant]*

PLATE XV. Farm Planning in Buganda [*Photograph by M. F. Merchant*]

PLATE XVI. High grade Guernsey cattle in Buganda
[*Photograph by M. F. Merchant*]

(ii) *Serere Farm*

135. Rainfall totalled 55 inches, which was slightly more than average but distribution was poor, May, June and August being particularly dry.

136. The bulk of the cropping was again cotton mainly for experimental purposes but bulrush millet, sorghum, maize and groundnuts were also grown. During the year more fencing was erected and the grazing trials became a large project occupying 48 acres in all. Development of natural grassland on the station was assisted by the introduction of a Gyromower, but lantana continued to be a serious pest.

137. In collaboration with the Farm Planning and Special Development sections a hand-operated seed drill was successfully brought into production. A prototype groundnut harvester and the Hawkins's equipment for cultivation using the system of tied ridges were tested in co-operation with the National Institute of Agricultural Engineering. Although the tied-ridge system offers some advantages, especially in soil and water conservation, it does require very even land, free from all obstruction such as is not usually found in the Serere area.

(iii) *Pasture Agronomy at Kawanda*

138. The use of elephant grass (*Pennisetum purpureum*) as the main resting crop in arable rotations has been continued. The resting fields which now provide the bulk of the farm's fodder are grazed intensively and the system of management has maintained the elephant grass in a healthy condition and at a satisfactory level of productivity. Under this system it has also been possible to increase the stock-carrying capacity.

139. Observations and experiments on short grasses and legumes have continued, and it has been shown that the presence of lucerne can stimulate the growth of grass in a *Chloris gayana* ley. Lucerne continued to grow vigorously under Kawanda conditions, annual yields from a series of varieties varying from 17 to 27 tons per acre. Among recent introductions Pangola grass (*Digitaria decumbens*) continued to grow well and it appeared to form a good mixture with short-growing legumes such as Kenya white clover.

(iv) *Pasture Agronomy at Serere*

140. Research on temporary leys was confined to fewer species comprising *Chloris gayana, Panicum maximum,* and *Hyparrhenia rufa* in conjunction with the legumes *Stylosanthes gracilis* and *Centrosema pubescens*. The superiority of *Hyparrhenia rufa* in palatability to cattle was confirmed. Elephant grass was used as a row crop managed especially for dry-season grazing.

141. *Stylosanthes gracilis* in mixture with grass gave greater total herbage production, better ground cover and apparently better live-weight gains per acre than grass alone. On Serere soils this plant is very aggressive in competition with grass. This is due to its relatively low palatability during the wet season and to its propensity for prolific self-seeding.

(v) *Livestock at Kawanda*

142. Efforts have been concentrated on building-up the number of good female cattle in order that they might be used in the Jersey/Nganda crossing programme. As a preliminary to this scheme, artificial insemination was introduced using Nganda semen supplied by the Animal Health and Livestock Improvement Centre at Old Entebbe. A 70 per cent conception rate to the first service was obtained. The change over to imported Jersey semen will be made during 1960.

143. Milk yield continued to improve and out of 40 cows all but three gave over 100 gallons per lactation in addition to what was taken by the calf. For comparison, in 1947 under good short-grass management, only four cows out of 25 exceeded this figure.

(vi) *Livestock at Serere*

144. Heavy selection for improved beef characters was practised throughout the year. About half the heifers reared were sold off, prior to being bulled, for failing to reach the three-year-old weight standard. This was raised during the year from 500 lb. to 550 lb. The qualifying weight for bulls was maintained at 700 lb. at three years and three bulls exceeded this standard, one reaching 932 lb. by three and a quarter years. The progeny test data from two of the bulls tested in previous years justified their return for use as proven sires.

145. Despite the sale of some of the best milking cows, milk yields again rose, creating new records for completed normal lactations (259 gallons) and average daily morning milk yields (5·3 lb.).

146. One of the most interesting features of the year's work was the attempt to introduce E.C.F.-susceptible improved Boran stock from Kenya. This involved the use of previously untried techniques such as antibiotic feeds to protect animals while they picked up tick-borne infections during normal grazing. At first, losses were heavy (70 per cent mortality) but subsequent introductions showed much more promise of prospering (seven per cent mortality in six months).

(vii) *Project Costings and Farm Management—Kawanda*

147. This has been a year of steady progress and activities have expanded greatly. Bottlenecks were found at certain times of the year and it is expected that in the near future the optimum size holding for the fixed labour force will be reached. New projects that have been tried and

costed include a stall-feeding unit for cattle, a small deep-litter poultry unit, plots of a Zanzibar variety of chillies, eucalyptus, citrus, cotton, maize, beans, and groundnuts used for interplanting coffee, a fish pond, and a beehive.

(viii) *Farming Systems*

148. It was felt that the study of farming systems could best be recorded as the sixth of a series of memoirs of the Research Division and eventually as a separate book. The Protectorate has been divided into seven zones for this study:—

1. Teso systems.
2. Plantains and coffee systems.
3. Plantains, millet and cotton systems.
4. Northern systems.
5. West Nile systems.
6. Montane systems.
7. Pastoral systems.

149. The memoirs on Teso systems and plantains and coffee systems, respectively, were completed during the year. Much information was gathered on the remaining systems and the memoirs on these will be completed in 1960.

## VII. STAFF

150. In order to intensify the production drive 18 Field Officers were appointed to the Field Division whilst six joined the staff of the farm institutes. Four Marketing Officers were recruited to the Crop Industries Section of the Department and one Agricultural Officer (Woman) and one Field Officer (Woman) took up their appointments. The Officer-in-Charge, Coffee Research Unit, resigned during the year, thus two posts of Botanist and one Chemist remained vacant. Eleven Assistant Agricultural Officers were absent from the Protectorate throughout the year taking university degree courses with a view to qualifying as Agricultural Officers or specialist officers.

151. In September the Department lost through retirement the services of Mr. D. F. Stewart, Assistant Director of Agriculture (Field). Mr. Stewart had served the Department loyally and well for over 23 years and will be particularly remembered for his untiring efforts in increasing agricultural production in the Eastern Province.

152. Members of the Department were honoured by Her Majesty the Queen who was graciously pleased to confer the following awards:—

*New Year's Honours, 1959*

Mr. G. L. Kigundu, Agricultural Officer (Uganda) to be a Member of the Most Excellent Order of the British Empire (Civil Division).

Mr. P. K. Lukwago, Office Assistant, Department of Agriculture, Kawanda, Certificate of Honour.

*Queen's Birthday Honours, 1959*

Mr. J. G. M. King, O.B.E., Director of Agriculture, to be a Companion of the Most Distinguished Order of St. Michael and St. George.

## VIII. ACKNOWLEDGMENTS

153. Once again it is my pleasure to acknowledge the help and co-operation which this Department has received during the year from both official and non-official bodies and from other departments of Government. My thanks are particularly due to members of the Cotton and Coffee Advisory Committees and to the Minister of Natural Resources and his staff. Finally, I would like to thank all members of my staff for their hard work and loyal support throughout the year.

J. G. M. KING,
*Director of Agriculture.*

ENTEBBE,
18TH MAY, 1960.

## UGANDA RAINFALL, 1959

| Station | | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ABI .. | Total : ins. .. | 0·09 | 0·97 | 3·67 | 4·71 | 8·09 | 2·67 | 2·43 | 11·81 | 8·82 | 8·35 | 5·84 | 0·00 | 57·45 |
| | Days .. | 2 | 2 | 6 | 12 | 10 | 6 | 6 | 11 | 14 | 10 | 8 | 0 | 87 |
| | Mean : ins. .. | 0·74 | 1·23 | 4·02 | 5·62 | 6·11 | 5·02 | 5·84 | 8·93 | 7·79 | 7·68 | 4·45 | 1·53 | 58·96 |
| GULU .. | Total : ins. .. | 0·41 | 1·25 | 5·45 | 5·34 | 8·69 | 4·90 | 3·24 | 7·54 | 8·30 | 4·52 | 4·15 | 0·07 | 53·86 |
| | Days .. | 4 | 9 | 12 | 17 | 18 | 12 | 11 | 19 | 18 | 17 | 16 | 2 | 155 |
| | Mean : ins. .. | 0·46 | 1·68 | 3·42 | 6·88 | 7·87 | 5·70 | 6·52 | 8·90 | 6·87 | 6·41 | 3·71 | 1·78 | 60·20 |
| LIRA .. | Total : ins. .. | 0·81 | 0·61 | 7·65 | 3·92 | 11·20 | 1·62 | 3·46 | 9·31 | 9·50 | 7·47 | 3·67 | 0·22 | 59·44 |
| | Days .. | 1 | 3 | 9 | 9 | 17 | 6 | 10 | 16 | 19 | 15 | 11 | 3 | 119 |
| | Mean : ins. .. | 1·09 | 1·37 | 3·45 | 6·77 | 7·39 | 5·06 | 5·12 | 8·69 | 6·47 | 5·61 | 2·99 | 1·62 | 55·63 |
| MOROTO .. | Total : ins. .. | 0·43 | 1·36 | 5·02 | 3·44 | 4·93 | 1·78 | 5·06 | 1·58 | 0·52 | 3·97 | 3·72 | 0·47 | 32·28 |
| | Days .. | 2 | 3 | 10 | 6 | 17 | 6 | 11 | 7 | 5 | 11 | 8 | 1 | 87 |
| | Mean : ins. .. | 0·35 | 1·23 | 2·78 | 4·85 | 5·82 | 3·48 | 5·33 | 4·24 | 2·00 | 1·90 | 1·73 | 0·94 | 34·65 |
| SERERE .. | Total : ins. ... | 0·95 | 1·75 | 6·69 | 7·63 | 5·67 | 3·38 | 4·13 | 3·02 | 6·17 | 5·90 | 9·15 | 0·15 | 54·59 |
| | Days .. | 6 | 7 | 15 | 16 | 16 | 12 | 12 | 16 | 17 | 18 | 12 | 4 | 151 |
| | Mean : ins. .. | 0·88 | 2·16 | 3·67 | 8·27 | 7·52 | 4·14 | 4·57 | 6·36 | 5·51 | 4·43 | 3·58 | 2·10 | 53·19 |
| MBALE .. | Total : ins. .. | 2·78 | 1·74 | 5·96 | 5·68 | 4·52 | 2·07 | 5·30 | 3·13 | 3·98 | 7·20 | 2·36 | 0·35 | 45·07 |
| | Days .. | 7 | 8 | 13 | 14 | 14 | 8 | 15 | 15 | 12 | 15 | 14 | 3 | 145 |
| | Mean : ins. .. | 1·02 | 1·96 | 3·68 | 6·36 | 6·59 | 4·87 | 4·58 | 5·33 | 4·20 | 3·26 | 2·33 | 1·63 | 45·81 |
| TORORO .. | Total : ins. .. | 3·59 | 4·71 | 3·35 | 10·31 | 6·31 | 2·03 | 1·36 | 3·08 | 6·39 | 4·17 | 4·80 | 2·68 | 52·78 |
| | Days .. | 11 | 10 | 12 | 22 | 14 | 10 | 12 | 15 | 17 | 18 | 17 | 9 | 167 |
| | Mean : ins. .. | 1·99 | 2·66 | 5·37 | 8·61 | 8·47 | 4·09 | 3·96 | 4·53 | 4·02 | 4·59 | 3·78 | 2·88 | 54·95 |
| JINJA .. | Total : ins. .. | 3·47 | 3·77 | 2·97 | 7·01 | 2·63 | 2·85 | 2·52 | 4·34 | 2·73 | 8·55 | 7·73 | 1·27 | 49·84 |
| | Days .. | 11 | 11 | 8 | 18 | 12 | 10 | 7 | 14 | 13 | 19 | 17 | 7 | 147 |
| | Mean : ins. .. | 3·56 | 2·43 | 3·44 | 7·68 | 4·87 | 2·32 | 2·04 | 3·80 | 2·65 | 4·38 | 4·21 | 3·45 | 44·83 |
| KABALE .. | Total : ins. .. | 3·42 | 3·14 | 3·17 | 4·97 | 2·33 | 0·01 | 0·01 | 1·29 | 3·25 | 4·13 | 5·06 | 3·49 | 34·27 |
| | Days .. | 13 | 11 | 16 | 22 | 16 | 1 | 1 | 13 | 12 | 19 | 24 | 17 | 165 |
| | Mean : ins. .. | 2·35 | 3·59 | 4·59 | 5·40 | 3·75 | 1·05 | 0·83 | 2·11 | 3·71 | 3·83 | 4·14 | 3·56 | 38·91 |
| MBARARA .. | Total : ins. .. | 2·06 | 2·29 | 3·57 | 3·66 | 4·22 | 0·00 | 0·01 | 0·86 | 1·83 | 6·70 | 4·53 | 1·72 | 31·45 |
| | Days .. | 14 | 18 | 16 | 16 | 18 | 0 | 1 | 7 | 13 | 25 | 25 | 17 | 170 |
| | Mean : ins. .. | 1·61 | 2·40 | 3·83 | 4·79 | 3·21 | 1·00 | 0·87 | 2·44 | 3·84 | 4·14 | 4·42 | 2·95 | 35·50 |

## Uganda Rainfall, 1959—*continued*

| Station | | Jan. | Feb. | Mar. | Apr. | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fort Portal | Total : ins. . . | 3·07 | 1·19 | 4·26 | 9·50 | 5·96 | 3·60 | 2·20 | 3·18 | 6·29 | 8·34 | 10·69 | 3·29 | 61·57 |
| | Days . . | 9 | 4 | 13 | 22 | 22 | 11 | 6 | 15 | 22 | 22 | 24 | 13 | 183 |
| | Mean : ins. . . | 1·33 | 2·81 | 5·32 | 7·35 | 5·61 | 3·24 | 2·33 | 4·58 | 7·39 | 8·40 | 6·38 | 3·05 | 57·79 |
| Bulindi . . | Total : ins. . . | 1·08 | 0·84 | 2·37 | 5·20 | 7·21 | 3·56 | 4·17 | 4·72 | 12·20 | 3·33 | 6·76 | 0·40 | 51·84 |
| | Days . . | 4 | 5 | 10 | 17 | 12 | 10 | 10 | 14 | 17 | 18 | 17 | 3 | 137 |
| | Mean : ins. . . | 1·32 | 2·30 | 4·08 | 7·01 | 5·31 | 3·50 | 3·58 | 5·84 | 6·56 | 4·87 | 3·81 | 2·20 | 50·38 |
| Masaka . . | Total : ins. . . | 1·03 | 1·73 | 4·95 | 5·18 | 2·32 | 4·81 | 1·90 | 3·14 | 0·66 | 5·35 | 3·11 | 2·31 | 36·49 |
| | Days . . | 4 | 7 | 9 | 15 | 9 | 7 | 4 | 9 | 4 | 12 | 16 | 12 | 108 |
| | Mean : ins. . . | 2·03 | 2·35 | 4·43 | 6·98 | 6·63 | 1·82 | 1·38 | 2·12 | 3·39 | 3·90 | 3·71 | 3·51 | 42·25 |
| Kakumiro . . | Total : ins. . . | 1·38 | 2·47 | 1·75 | 4·32 | 5·09 | 1·26 | 2·79 | 3·34 | 5·85 | 9·79 | 6·79 | 0·82 | 45·65 |
| | Days . . | 4 | 6 | 5 | 12 | 13 | 6 | 6 | 9 | 14 | 19 | 19 | 4 | 117 |
| | Mean : ins. . . | 1·37 | 2·28 | 4·33 | 6·56 | 4·20 | 2·73 | 2·84 | 5·28 | 6·68 | 7·18 | 5·35 | 2·75 | 51·55 |
| Mityana . . | Total : ins. . . | 1·67 | 2·57 | 6·47 | 8·40 | 3·23 | 1·93 | 1·92 | 9·75 | 1·17 | 5·66 | 7·47 | 1·21 | 51·45 |
| | Days . . | 6 | 7 | 14 | 18 | 14 | 4 | 9 | 14 | 8 | 16 | 23 | 9 | 142 |
| | Mean : ins. . . | 1·97 | 2·53 | 4·50 | 6·51 | 4·63 | 2·25 | 1·82 | 4·13 | 4·32 | 5·57 | 4·47 | 3·12 | 45·82 |
| Kampala . . | Total : ins. . . | 1·84 | 1·50 | 3·26 | 4·67 | 1·66 | 0·78 | 1·60 | 7·08 | 3·93 | 3·83 | 8·19 | 3·34 | 41·68 |
| | Days . . | 6 | 8 | 11 | 15 | 11 | 4 | 5 | 7 | 10 | 13 | 20 | 10 | 120 |
| | Mean : ins. . . | 2·25 | 2·17 | 3·77 | 6·38 | 5·65 | 2·47 | 2·31 | 4·34 | 3·84 | 3·85 | 4·78 | 3·38 | 45·19 |
| Entebbe . . | Total : ins. . . | 1·58 | 2·18 | 4·54 | 9·25 | 5·83 | 3·49 | 4·05 | 4·36 | 7·78 | 5·20 | 7·70 | 0·58 | 56·54 |
| | Days . . | 7 | 11 | 14 | 19 | 9 | 9 | 10 | 13 | 12 | 13 | 21 | 9 | 147 |
| | Mean : ins. . . | 4·07 | 3·11 | 5·90 | 10·91 | 10·79 | 4·15 | 2·63 | 3·47 | 3·46 | 3·47 | 5·47 | 5·01 | 62·44 |

## COTTON PRODUCTION, 1958/59 SEASON

| Province and Zone | Acreages | | Sales in Tons (Seed Cotton) | | Yield per Acre (Seed Cotton) | |
|---|---|---|---|---|---|---|
| | Totals | Mean | Totals | Mean | Totals | Mean |
| | 1958/59 | 1953/54–1957/58 | 1958/59 | 1953/54–1957/58 | 1958/59 | 1953/54–1957/58 |
| | | | | | *lb.* | *lb.* |
| Buganda— | | | | | | |
| Mengo .. .. | 271,505 | 287,496 | 44,153 | 50,776 | 364 | 396 |
| Masaka .. .. | 40,098 | 31,936 | 3,973 | 4,299 | 222 | 301 |
| Mubende .. .. | 72,424 | 60,140 | 12,297 | 10,215 | 380 | 380 |
| Totals .. | 384,027 | 379,572 | 60,423 | 65,290 | 352 | 385 |
| Western— | | | | | | |
| Bunyoro .. .. | 55,444 | 31,237 | 6,573 | 4,951 | 266 | 355 |
| Toro .. .. | 34,832 | 30,015 | 5,475 | 3,611 | 352 | 269 |
| Totals .. | 90,276 | 61,252 | 12,048 | 8,562 | 299 | 313 |
| Eastern— | | | | | | |
| Busoga .. .. | 452,582 | 347,943 | 58,120 | 51,835 | 288 | 334 |
| Mbale .. .. | 417,247 | 332,980 | 35,369 | 31,879 | 190 | 214 |
| South Teso .. | 75,950 | 58,310 | 6,245 | 5,426 | 184 | 208 |
| South Teso Segregated | 51,060 | 38,221 | 5,740 | 4,396 | 252 | 258 |
| North Teso .. | 78,304 | 58,515 | 6,187 | 4,851 | 177 | 186 |
| Usuku .. .. | 24,320 | 16,474 | 2,178 | 1,717 | 201 | 233 |
| Totals .. | 1,099,463* | 852,443 | 113,839† | 100,104 | 232 | 263 |
| Northern— | | | | | | |
| Lango .. .. | 233,176 | 173,004 | 24,546 | 16,609 | 236 | 215 |
| East Acholi .. | 77,482 | 52,193 | 7,129 | 5,800 | 206 | 249 |
| West Acholi .. | 63,192 | 40,609 | 8,199 | 6,362 | 291 | 351 |
| West Nile .. .. | 66,404 | 65,146 | 10,624 | 7,698 | 358 | 265 |
| Totals .. | 440,254* | 330,952 | 50,498† | 36,469 | 257 | 247 |
| PROTECTORATE TOTALS .. .. | 2,014,020 | 1,624,219 | 236,808 | 210,425 | 263 | 290 |

* These figures do not agree with provincial totals as shown in Tables III (*a*), III (*c*) and III (*e*) due to the fact that the boundaries of zones listed under Eastern and Northern Provinces do not coincide with provincial boundaries. The differences are compensating and the Protectorate totals in Tables II (*a*) and III (*a*) agree.

† Similarly these figures do not agree with those in Table IV (*a*), the Protectorate totals, however, agree.

## COTTON PRODUCTION, 1959/60 SEASON

### (Monthly Plantings—Acres)

| Province and Zone | April | May | June | July | Aug. | Sept. | Total |
|---|---|---|---|---|---|---|---|
| Buganda— | | | | | | | |
| Mengo .. | — | 4,194 | 40,112 | 109,524 | 64,819 | 6,962 | 225,611 |
| Masaka .. | — | 2,654 | 6,386 | 9,206 | 9,347 | 3,525 | 31,118 |
| Mubende .. | — | 1,929 | 12,124 | 22,057 | 27,100 | 5,223 | 68,433 |
| Totals .. | — | 8,777 | 58,622 | 140,787 | 101,266 | 15,710 | 325,162 |
| Western— | | | | | | | |
| Bunyoro .. | — | 2,177 | 8,395 | 34,622 | 11,784 | — | 56,978 |
| Toro .. .. | — | — | — | 341 | 24,348 | 10,081 | 34,770 |
| Totals .. | — | 2,177 | 8,395 | 34,963 | 36,132 | 10,081 | 91,748 |
| Eastern— | | | | | | | |
| Busoga .. | 4,756 | 97,124 | 129,570 | 103,810 | 45,419 | — | 380,679 |
| Mbale .. | 13,756 | 67,491 | 94,120 | 87,330 | 46,125 | — | 308,822 |
| South Teso .. | 7,446 | 31,920 | 14,574 | 7,028 | 291 | — | 61,259 |
| South Teso Segregated .. | 1,427 | 10,043 | 9,732 | 4,461 | 63 | — | 25,726 |
| North Teso .. | 3,344 | 16,704 | 10,906 | 5,774 | 178 | — | 36,906 |
| Usuku.. .. | 1,930 | 9,623 | 3,207 | 254 | 6 | — | 15,020 |
| Totals .. | 32,659 | 232,905 | 262,109 | 208,657 | 92,082 | — | 828,412* |
| Northern— | | | | | | | |
| Lango .. | 2,442 | 24,773 | 74,315 | 54,850 | 21,151 | 518 | 178,049 |
| East Acholi .. | 47 | 3,997 | 14,319 | 15,529 | 9,278 | — | 43,170 |
| West Acholi .. | 2 | 5,092 | 25,926 | 18,973 | 7,407 | — | 57,400 |
| West Nile .. | — | 2,831 | 9,749 | 18,195 | 9,271 | 757 | 40,803 |
| Totals .. | 2,491 | 36,693 | 124,309 | 107,547 | 47,107 | 1,275 | 319,422* |
| Protectorate Totals .. | 35,150 | 280,552 | 453,435 | 491,954 | 276,587 | 27,066 | 1,564,744 |

* These figures do not agree with those in Tables III (*a*) and III (*e*) due to the fact that the boundaries of the zones listed under Eastern and Northern Provinces do not coincide with the provincial boundaries. The differences are compensating ; the Protectorate totals agree.

## COTTON—MONTHLY PLANTINGS AS PERCENTAGES OF TOTAL

| Province and Zone | April | | May | | June | | July | | August | | September | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1959/60 | Mean 1954/55–1958/59 | 1959/60 | Mean 1954/55–1958/59 | 1959/60 | Mean 1954/55–1958/59 | 1959/60 | Mean 1954/55–1958/59 | 1959/60 | Mean 1954/55–1958/59 | 1959/60 | Mean 1954/55 1958/59 |
| *Buganda*— | | | | | | | | | | | | |
| Mengo .. .. .. | — | — | 1·9 | 0·8 | 17·8 | 24·8 | 48·5 | 42·9 | 28·7 | 30·0 | 3·1 | 1·5 |
| Masaka .. .. .. | — | — | 8·5 | 8·5 | 20·5 | 25·8 | 29·6 | 17·0 | 30·1 | 32·5 | 11·3 | 16·2 |
| Mubende .. .. .. | — | — | 2·8 | 2·1 | 17·7 | 17·6 | 32·3 | 39·0 | 39·6 | 38·3 | 7·6 | 3·0 |
| Totals .. | — | — | 2·7 | 1·7 | 18·0 | 23·7 | 43·3 | 39·9 | 31·2 | 31·6 | 4·8 | 3·1 |
| *Western*— | | | | | | | | | | | | |
| Bunyoro .. .. .. | — | — | 3·8 | 4·2 | 14·7 | 21·5 | 60·8 | 44·4 | 20·7 | 29·8 | — | 0·1 |
| Toro .. .. .. .. | — | — | — | — | — | 0·3 | 1·0 | 15·5 | 70·0 | 64·6 | 29·0 | 19·6 |
| Totals .. | — | — | 2·4 | 2·3 | 9·1 | 11·7 | 38·1 | 31·0 | 39·4 | 45·9 | 11·0 | 9·1 |
| *Eastern*— | | | | | | | | | | | | |
| Busoga .. .. .. | 1·3 | 0·3 | 25·5 | 17·0 | 34·0 | 26·6 | 27·3 | 35·8 | 11·9 | 18·6 | — | 1·7 |
| Mbale .. .. .. | 4·5 | 0·8 | 21·8 | 11·5 | 30·5 | 28·2 | 28·3 | 37·6 | 14·9 | 21·2 | — | 0·7 |
| South Teso .. .. .. | 12·2 | 3·8 | 52·0 | 30·0 | 23·8 | 30·1 | 11·5 | 24·0 | 0·5 | 11·6 | — | 0·5 |
| South Teso Segregated .. .. | 5·5 | 2·8 | 39·0 | 24·9 | 37·9 | 29·1 | 17·4 | 26·1 | 0·2 | 16·6 | — | 0·5 |
| North Teso .. .. .. | 9·1 | 1·6 | 45·3 | 26·3 | 29·5 | 34·0 | 15·6 | 28·5 | 0·5 | 9·6 | — | — |
| Usuku .. .. .. | 12·8 | 5·4 | 64·1 | 57·7 | 21·4 | 29·7 | 1·7 | 7·0 | — | 0·2 | — | — |
| Totals .. | 4·0 | 1·0 | 28·1 | 17·6 | 31·6 | 28·1 | 25·2 | 34·2 | 11·1 | 18·1 | — | 1·0 |
| *Northern*— | | | | | | | | | | | | |
| Lango .. .. .. | 1·4 | 0·5 | 13·9 | 7·9 | 41·7 | 34·1 | 30·8 | 39·8 | 11·9 | 17·4 | 0·3 | 0·3 |
| East Acholi .. .. .. | 0·1 | 0·1 | 9·2 | 11·6 | 33·2 | 33·5 | 36·0 | 38·8 | 21·5 | 16·0 | — | — |
| West Acholi .. .. .. | — | — | 8·9 | 3·7 | 45·2 | 32·1 | 33·0 | 45·4 | 12·9 | 18·0 | — | 0·8 |
| West Nile .. .. .. | — | — | 6·9 | 0·5 | 23·9 | 22·1 | 44·6 | 43·2 | 22·7 | 33·9 | 1·9 | 0·3 |
| Totals .. | 0·8 | 0·3 | 11·5 | 6·6 | 38·9 | 31·6 | 33·7 | 41·0 | 14·7 | 20·2 | 0·4 | 0·3 |
| PROTECTORATE TOTALS .. | 2·3 | 0·6 | 17·9 | 11·2 | 29·0 | 27·2 | 31·4 | 36·7 | 17·7 | 22·6 | 1·7 | 1·7 |

## COTTON PRODUCTION

### (Number of Bales of 400 lb., 1907–1959)

*(Note :— All figures are corrected to 1,000 bales).*

| Season | Bales (Actual) | Bales (5-year average) | Season | Bales (Actual) | Bales (5-year average) |
|---|---|---|---|---|---|
| 1907 .. .. | 2,000 | — | 1933/34 .. | 286,000 | 271,000 |
| 1908 .. .. | 4,000 | — | 1934/35 .. | 253,000 | 296,000 |
| 1909 .. .. | 5,000 | 9,000 | 1935/36 .. | 316,000 | 321,000 |
| 1910 .. .. | 12,000 | 13,000 | 1936/37 .. | 332,000 | 325,000 |
| 1911 .. .. | 20,000 | 21,000 | 1937/38 .. | 418,000 | 335,000 |
| 1912–13 .. | 26,000 | 25,000 | 1938/39 .. | 307,000 | 344,000 |
| 1913/14 .. | 40,000 | 27,000 | 1939/40 .. | 300,000 | 326,000 |
| 1914/15 .. | 26,000 | 28,000 | 1940/41 .. | 365,000 | 264,000 |
| 1915/16 .. | 22,000 | 29,000 | 1941/42 .. | 238,000 | 241,000 |
| 1916/17 .. | 28,000 | 26,000 | 1942/43 .. | 112,000 | 236,000 |
| 1917/18 .. | 27,000 | 30,000 | 1943/44 .. | 191,000 | 208,000 |
| 1918/19 .. | 36,000 | 44,000 | 1944/45 .. | 272,000 | 207,000 |
| 1919/20 .. | 47,000 | 48,000 | 1945/46 .. | 227,000 | 218,000 |
| 1920/21 .. | 81,000 | 60,000 | 1946/47 .. | 231,000 | 258,000 |
| 1921/22 .. | 48,000 | 78,000 | 1947/48 .. | 170,000 | 272,000 |
| 1922/23 .. | 88,000 | 108,000 | 1948/49 .. | 391,000 | 295,000 |
| 1923/24 .. | 128,000 | 128,000 | 1949/50 .. | 339,000 | 325,000 |
| 1924/25 .. | 196,000 | 145,000 | 1950/51 .. | 346,000 | 355,000 |
| 1925/26 .. | 180,000 | 155,000 | 1951/52 .. | 380,000 | 357,000 |
| 1926/27 .. | 131,000 | 170,000 | 1952/53 .. | 320,000 | 349,000 |
| 1927/28 .. | 138,000 | 156,000 | 1953/54 .. | 398,000 | 352,000 |
| 1928/29 .. | 204,000 | 157,000 | 1954/55 .. | 300,000 | 351,000 |
| 1929/30 .. | 125,000 | 173,000 | 1955/56 .. | 364,000 | 357,000 |
| 1930/31 .. | 189,000 | 204,000 | 1956/57 .. | 372,000 | 358,000 |
| 1931/32 .. | 207,000 | 220,000 | 1957/58 .. | 351,000 | — |
| 1932/33 .. | 295,000 | 246,000 | 1958/59 .. | 401,000 | — |

## COTTON PRODUCTION

### (Bales of Lint)

| Province and Zone | 1953/54 | 1954/55 | 1955/56 | 1956/57 | 1957/58 | Mean 1953/54–1957/58 | 1958/59 |
|---|---|---|---|---|---|---|---|
| BUGANDA— | | | | | | | |
| Mengo .. .. | 108,230 | 78,504 | 79,827 | 89,667 | 71,795 | 85,605 | 75,000 |
| Masaka .. | 8,797 | 6,355 | 8,072 | 7,003 | 6,012 | 7,249 | 6,609 |
| Mubende .. | 19,498 | 13,651 | 17,718 | 15,913 | 19,968 | 17,350 | 20,845 |
| TOTALS . | 136,525 | 98,510 | 105,617 | 112,593 | 97,775 | 110,204 | 102,454 |
| WESTERN— | | | | | | | |
| Bunyoro .. | 9,519 | 7,338 | 9,069 | 7,894 | 7,959 | 8,356 | 11,198 |
| Toro .. .. | 5,629 | 4,027 | 5,074 | 8,229 | 8,025 | 6,197 | 9,697 |
| TOTALS .. | 15,148 | 11,365 | 14,143 | 16,123 | 15,984 | 14,553 | 20,895 |
| TOTAL B.P.52 .. | 151,673 | 109,875 | 119,760 | 128,716 | 113,759 | 124,757 | 123,349 |
| EASTERN— | | | | | | | |
| Busoga .. .. | 93,368 | 62,897 | 93,665 | 107,840 | 84,270 | 88,408 | 96,809 |
| Mbale .. .. | 67,688 | 45,381 | 51,366 | 48,711 | 54,949 | 53,619 | 59,924 |
| South Teso .. | 8,652 | 8,602 | 9,804 | 10,525 | 8,833 | 9,283 | 10,484 |
| South Teso Segregated .. | 7,478 | 5,895 | 8,101 | 8,597 | 6,496 | 7,313 | 9,531 |
| North Teso .. | 6,767 | 9,494 | 7,254 | 9,063 | 8,557 | 8,227 | 10,628 |
| Usuku .. .. | 2,826 | 3,916 | 2,727 | 2,975 | 2,145 | 2,918 | 3,596 |
| TOTALS .. | 186,779 | 136,185 | 172,917 | 187,711 | 165,250 | 169,768 | 190,972 |
| NORTHERN— | | | | | | | |
| Lango .. .. | 28,870 | 25,948 | 30,865 | 26,589 | 30,743 | 28,603 | 42,082 |
| East Acholi .. | 6,243 | 7,457 | 13,501 | 8,788 | 13,842 | 9,966 | 12,454 |
| West Acholi .. | 9,558 | 11,345 | 10,621 | 8,614 | 14,130 | 10,853 | 13,892 |
| West Nile .. | 14,471 | 9,021 | 15,785 | 11,767 | 12,969 | 12,803 | 17,933 |
| TOTALS .. | 59,142 | 53,771 | 70,772 | 55,758 | 71,684 | 62,225 | 86,361 |
| TOTAL S.47 .. | 245,921 | 189,956 | 243,689 | 243,469 | 236,934 | 231,993 | 277,333 |
| PROTECTORATE TOTALS .. | 397,594 | 299,831 | 363,449 | 372,185 | 350,693 | 356,750 | 400,682 |

All figures exclude production by research and experiment stations.

## CROP PRODUCTION

### Estimated Acreages under Crops, 1958 and 1959—African Cultivation

| Crop | Buganda | | Eastern | | Northern | | Western | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| Bambara Nuts | — | — | 438 | 71 | — | — | — | 5 | 438 | 76 |
| Beans, Mixed | 124,548 | 150,993 | 141,220 | 179,791 | 121,990 | 120,250 | 138,244 | 125,464 | 526,002 | 576,498 |
| Beans, Soya | 2,673 | 4,503 | — | — | — | — | 96 | 505 | 2,769 | 5,008 |
| Cassava | 52,756 | 68,511 | 262,921 | 287,572 | 209,577 | 201,721 | 142,276 | 118,332 | 667,530 | 676,136 |
| Chillies | — | — | — | — | — | — | 11 | 15 | 11 | 15 |
| Cocoa | — | 100 | — | — | — | — | — | — | — | 100 |
| Coffee, Arabica | 1,607 | 1,607 | 23,906 | 24,006 | 884 | 554 | 7,479 | 8,468 | 33,876 | 34,635 |
| Coffee, Robusta | 416,730 | 440,730 | 6,990 | 7,553 | 220 | 237 | 12,541 | 14,132 | 436,481 | 462,652 |
| Cotton | 384,027 | 325,162 | 1,129,401 | 856,844 | 410,316 | 290,990 | 90,276 | 91,748 | 2,014,020 | 1,564,744 |
| Gram | 7,635 | 7,322 | 1,537 | 1,484 | 1,011 | 119 | 5 | 81 | 10,188 | 9,006 |
| Groundnuts | 85,186 | 98,857 | 238,888 | 228,674 | 96,441 | 76,428 | 26,820 | 22,805 | 447,335 | 426,764 |
| Maize | 97,278 | 117,918 | 147,762 | 145,498 | 48,246 | 46,048 | 46,899 | 50,453 | 340,185 | 359,917 |
| Millet, Sorghum | 46,077 | 57,474 | 174,299 | 196,473 | 258,315 | 245,270 | 203,672 | 205,989 | 682,363 | 705,206 |
| Millet, Finger | 22,444 | 28,797 | 787,638 | 773,033 | 295,079 | 356,793 | 112,843 | 111,919 | 1,218,004 | 1,270,542 |
| Millet, Bulrush | — | — | 166 | 544 | 5,294 | 5,446 | — | — | 5,460 | 5,990 |
| Onions | — | — | — | — | — | — | 814 | 1,992 | 814 | 1,992 |
| Peas, Pigeon | — | — | 1,307 | 1,905 | 162,847 | 241,883 | 533 | 1,133 | 164,687 | 244,921 |
| Peas, Field | — | — | — | — | — | — | 31,246 | 31,439 | 31,246 | 31,439 |
| Plantains | 497,933 | 527,467 | 452,188 | 454,046 | 3,266 | 3,003 | 386,511 | 413,146 | 1,339,898 | 1,397,662 |
| Potatoes, Sweet | 100,852 | 121,337 | 205,410 | 343,412 | 82,249 | 63,563 | 174,177 | 183,393 | 562,688 | 711,705 |
| Potatoes, Solanum | — | — | 942 | 167 | — | — | 10,208 | 9,435 | 11,150 | 9,602 |
| Rice | — | — | 4,501 | 4,779 | 1,079 | 1,071 | 87 | 1,555 | 5,667 | 7,405 |
| Simsim | 7,285 | 6,487 | 17,819 | 20,438 | 214,243 | 203,293 | 5,223 | 4,757 | 244,570 | 234,975 |
| Sunflower | — | — | — | — | 40 | — | 5 | 3 | 45 | 3 |
| Sunn-hemp | — | — | 202 | 1,083 | — | — | — | — | 202 | 1,083 |
| Tobacco, Air-cured | 231 | — | — | — | 1,415 | 737 | 615 | 3,666 | 2,261 | 4,403 |
| Tobacco, Fire-cured | 1,665 | 1,702 | 6 | 2 | — | — | 5,975 | 6,424 | 7,646 | 8,128 |
| Tobacco, Flue-cured | — | — | — | — | 3,482 | 2,795 | 517 | 520 | 3,999 | 3,315 |
| Wheat | — | — | 221 | — | — | — | 380 | 294 | 601 | 294 |
| Yams | — | — | 53 | 17 | — | — | — | — | 53 | 17 |
| Total | 1,848,927 | 1,958,967 | 3,597,815 | 3,527,392 | 1,915,994 | 1,860,201 | 1,397,453 | 1,407,673 | 8,760,189 | 8,754,233 |

## CROP PRODUCTION

### Estimated Acreages under Crops, 1958 and 1959—African Cultivation

#### BUGANDA PROVINCE

| Crop | Mengo | | Masaka | | Mubende | | Total | |
|---|---|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| Beans, Mixed | 71,869 | 95,339 | 37,698 | 37,578 | 14,981 | 18,076 | 124,548 | 150,993 |
| Beans, Soya | 2,673 | 4,503 | — | — | — | — | 2,673 | 4,503 |
| Cassava | 31,924 | 53,559 | 6,607 | 8,339 | 14,225 | 6,613 | 52,756 | 68,511 |
| Cocoa | — | 97 | — | 2 | — | 1 | — | 100 |
| Coffee, Arabica | 600 | 600 | 1,007 | 1,007 | — | — | 1,607 | 1,607 |
| Coffee, Robusta | 316,762 | 329,198 | 88,042 | 96,429 | 11,926 | 15,103 | 416,730 | 440,730 |
| Cotton | 315,762 | 272,109 | 40,098 | 31,118 | 28,167 | 21,935 | 384,027 | 325,162 |
| Gram | 5,366 | 5,300 | 553 | — | 1,716 | 2,022 | 7,635 | 7,322 |
| Groundnuts | 61,184 | 69,031 | 16,219 | 17,328 | 7,783 | 12,498 | 85,186 | 98,857 |
| Maize | 79,298 | 77,132 | 13,169 | 34,572 | 4,811 | 6,214 | 97,278 | 117,918 |
| Millet, Sorghum | 27,149 | 35,110 | 14,729 | 15,990 | 4,199 | 6,374 | 46,077 | 57,474 |
| Millet, Finger | 16,036 | 22,480 | 1,174 | — | 5,234 | 6,317 | 22,444 | 28,797 |
| Plantains | 320,609 | 328,625 | 150,543 | 183,763 | 26,781 | 15,079 | 497,933 | 527,467 |
| Potatoes, Sweet | 68,713 | 90,208 | 16,982 | 16,204 | 15,157 | 14,925 | 100,852 | 121,337 |
| Simsim | 6,258 | 5,489 | — | — | 1,027 | 998 | 7,285 | 6,487 |
| Tobacco, Air-cured | — | — | — | — | 231 | — | 231 | — |
| Tobacco, Fire-cured | — | — | — | — | 1,665 | 1,702 | 1,665 | 1,702 |
| Total | 1,324,203 | 1,388,780 | 386,821 | 442,330 | 137,903 | 127,857 | 1,848,927 | 1,958,967 |

## CROP PRODUCTION

### Estimated Acreages under Crops, 1958 and 1959—African Cultivation

EASTERN PROVINCE

| Crop | Busoga | | Bukedi | | Bugisu | | Teso | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| Bambara Nuts .. .. | — | — | — | — | — | — | 438 | 71 | 438 | 71 |
| Beans, Mixed .. .. | 22,308 | 25,099 | 35,356 | 39,874 | 26,347 | 25,427 | 57,209 | 89,391 | 141,220 | 179,791 |
| Cassava .. .. .. | 50,295 | 62,148 | 110,066 | 103,541 | 24,230 | 19,404 | 78,330 | 102,479 | 262,921 | 287,572 |
| Coffee, Arabica .. .. | — | — | — | — | 23,900 | 24,000 | 6 | 6 | 23,906 | 24,006 |
| Coffee, Robusta .. .. | 6,990 | 7,553 | — | — | — | — | — | — | 6,990 | 7,553 |
| Cotton .. .. .. | 452,582 | 380,679 | 277,563 | 204,137 | 75,955 | 51,506 | 323,301 | 220,522 | 1,129,401 | 856,844 |
| Gram .. .. .. | — | — | — | — | — | — | 1,537 | 1,484 | 1,537 | 1,484 |
| Groundnuts .. .. .. | 80,596 | 54,785 | 53,742 | 47,236 | 12,130 | 10,966 | 92,420 | 115,687 | 238,888 | 228,674 |
| Maize .. .. .. | 48,974 | 53,349 | 24,089 | 24,543 | 67,388 | 59,154 | 7,311 | 8,452 | 147,762 | 145,498 |
| Millet, Sorghum .. .. | 1,865 | 2,122 | 26,972 | 22,588 | 10,604 | 8,481 | 134,858 | 163,282 | 174,299 | 196,473 |
| Millet, Finger .. .. | 128,875 | 150,776 | 230,440 | 206,019 | 72,087 | 71,160 | 356,236 | 245,078 | 787,638 | 773,033 |
| Millet, Bulrush .. .. | — | — | — | — | — | — | 166 | 544 | 166 | 544 |
| Peas, Pigeon .. .. .. | — | — | — | — | — | — | 1,307 | 1,905 | 1,307 | 1,905 |
| Plantains .. .. .. | 196,400 | 196,872 | 53,000 | 54,000 | 200,000 | 200,000 | 2,788 | 3,174 | 452,188 | 454,046 |
| Potatoes, Sweet .. .. | 89,151 | 97,409 | 37,264 | 46,081 | 15,814 | 15,877 | 63,181 | 184,045 | 205,410 | 343,412 |
| Potatoes, Solanum .. .. | — | — | — | — | 942 | 167 | — | — | 942 | 167 |
| Rice .. .. .. | 132 | 249 | 4,157 | 4,037 | 52 | 90 | 160 | 403 | 4,501 | 4,779 |
| Simsim .. .. .. | 1,821 | 2,370 | 1,015 | 1,032 | 30 | 19 | 14,953 | 17,017 | 17,819 | 20,438 |
| Sunn-hemp .. .. .. | — | — | — | — | — | — | 202 | 1,083 | 202 | 1,083 |
| Tobacco, Fire-cured .. .. | — | — | — | — | — | — | 6 | 2 | 6 | 2 |
| Wheat .. .. .. | — | — | — | — | 221 | — | — | — | 221 | — |
| Yams .. .. .. | — | — | — | — | — | — | 53 | 17 | 53 | 17 |
| Total .. | 1,079,989 | 1,033,411 | 853,664 | 753,088 | 529,700 | 486,251 | 1,134,462 | 1,254,642 | 3,597,815 | 3,527,392 |

## CROP PRODUCTION

### Estimated Acreages under Crops, 1958 and 1959—African Cultivation

WESTERN PROVINCE

| Crop | Ankole | | Bunyoro | | Kigezi | | Toro | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| Bambara Nuts | — | — | — | — | — | — | — | 5 | — | 5 |
| Beans, Mixed | 18,914 | 21,422 | 11,547 | 8,846 | 57,771 | 56,342 | 50,012 | 38,854 | 138,244 | 125,464 |
| Beans, Soya | — | 454 | — | — | — | — | 96 | 51 | 96 | 505 |
| Cassava | 13,370 | 16,205 | 42,626 | 38,708 | 2,690 | 2,143 | 83,590 | 61,276 | 142,276 | 118,332 |
| Chillies | — | — | — | — | 11 | 11 | — | 4 | 11 | 15 |
| Coffee, Arabica | 2,685 | 3,500 | — | — | 582 | 659 | 4,212 | 4,309 | 7,479 | 8,468 |
| Coffee, Robusta | 5,888 | 7,065 | 1,242 | 1,392 | 953 | 1,067 | 4,458 | 4,608 | 12,541 | 14,132 |
| Cotton | — | — | 55,444 | 56,978 | — | — | 34,832 | 34,770 | 90,276 | 91,748 |
| Gram | — | — | — | — | — | — | 5 | 81 | 5 | 81 |
| Groundnuts | 7,272 | 5,504 | 9,454 | 8,659 | 4,253 | 4,200 | 5,841 | 4,442 | 26,820 | 22,805 |
| Maize | 5,127 | 5,211 | 5,633 | 6,853 | 25,835 | 25,000 | 10,304 | 13,389 | 46,899 | 50,453 |
| Millet, Sorghum | 48,006 | 45,605 | 935 | 879 | 149,492 | 154,630 | 5,239 | 4,875 | 203,672 | 205,989 |
| Millet, Finger | 14,748 | 15,601 | 16,373 | 19,491 | 69,201 | 64,796 | 12 521 | 12,031 | 112,843 | 111,919 |
| Onions | 104 | 925 | 260 | 223 | 310 | 432 | 140 | 412 | 814 | 1,992 |
| Peas, Field | 4,863 | 6,235 | — | 205 | 26,326 | 24,781 | 57 | 218 | 31,246 | 31,439 |
| Peas, Pigeon | — | — | 533 | 742 | — | — | — | 391 | 533 | 1,133 |
| Plantains | 280,643 | 304,018 | 19,518 | 19,608 | 72,317 | 73,849 | 14,033 | 15,671 | 386,511 | 413,146 |
| Potatoes, Sweet | 26,708 | 28,901 | 13,677 | 14,367 | 119,743 | 126,493 | 14,049 | 13,632 | 174,177 | 183,393 |
| Potatoes, Solanum | 132 | 192 | 17 | 2 | 9,873 | 8,999 | 186 | 242 | 10,208 | 9,435 |
| Rice | — | — | — | — | — | — | 87 | 1,555 | 87 | 1,555 |
| Simsim | 2 | 22 | 5,221 | 4,725 | — | — | — | 10 | 5,223 | 4,757 |
| Sunflower | — | — | — | — | 5 | 3 | — | — | 5 | 3 |
| Tobacco, Air-cured | 92 | 664 | — | — | 523 | 2,968 | — | 34 | 615 | 3,666 |
| Tobacco, Fire-cured | — | — | 5,975 | 6,424 | — | — | — | — | 5,975 | 6,424 |
| Tobacco, Flue-cured | — | — | — | — | 517 | 520 | — | — | 517 | 520 |
| Wheat | — | — | — | — | 268 | 193 | 112 | 101 | 380 | 294 |
| Total | 428,554 | 461,524 | 188,455 | 188,102 | 540,670 | 547,086 | 239,774 | 210,961 | 1,397,453 | 1,407,673 |

## CROP PRODUCTION

### Estimated Acreages under Crops, 1958 and 1959—African Cultivation

NORTHERN PROVINCE

| Crop | Lango | | Acholi | | West Nile/Madi | | Karamoja | | Total | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| Beans, Mixed | 39,050 | 34,025 | 31,081 | 30,850 | 51,859 | 55,060 | — | 315 | 121,990 | 120,250 |
| Cassava | 62,301 | 53,731 | 34,608 | 43,719 | 112,513 | 104,154 | 155 | 117 | 209,577 | 201,721 |
| Coffee, Arabica | — | — | — | 4 | 884 | 550 | — | — | 884 | 554 |
| Coffee, Robusta | — | — | — | — | 220 | 237 | — | — | 220 | 237 |
| Cotton | 214,817 | 155,928 | 127,663 | 93,457 | 66,404 | 40,803 | 1,432 | 802 | 410,316 | 290,990 |
| Gram | — | — | — | — | 1,011 | 119 | — | — | 1,011 | 119 |
| Groundnuts | 33,012 | 23,044 | 31,895 | 28,862 | 29,702 | 23,778 | 1,832 | 744 | 96,441 | 76,428 |
| Maize | 6,889 | 6,394 | 6,501 | 6,848 | 28,756 | 28,002 | 6,100 | 4,804 | 48,246 | 46,048 |
| Millet, Sorghum | 86,573 | 97,182 | 56,790 | 44,574 | 13,764 | 12,946 | 101,188 | 90,568 | 258,315 | 245,270 |
| Millet, Finger | 124,188* | 190,707* | 106,629 | 107,789 | 60,512 | 56,227 | 3,750 | 2,070 | 295,079 | 356,793 |
| Millet, Bulrush | — | — | 1,584 | 5,446 | — | — | 3,710 | — | 5,294 | 5,446 |
| Peas, Pigeon | 124,188* | 190,707* | 31,019 | 49,984 | 7,116 | 1,169 | 524 | 23 | 162,847 | 241,883 |
| Plantains | 1,185 | 692 | — | 175 | 2,081 | 2,136 | — | — | 3,266 | 3,003 |
| Potatoes, Sweet | 41,417 | 23,502 | 20,636 | 23,398 | 20,086 | 16,513 | 110 | 150 | 82,249 | 63,563 |
| Rice | 374 | 469 | — | 53 | 705 | 544 | — | 5 | 1,079 | 1,071 |
| Simsim | 83,109 | 94,550 | 95,540 | 71,484 | 34,924 | 35,800 | 670 | 1,459 | 214,243 | 203,293 |
| Sunflower | — | — | — | — | 40 | — | — | — | 40 | — |
| Tobacco Air-cured | — | — | — | — | 1,415 | 737 | — | — | 1,415 | 737 |
| Tobacco, Flue-cured | 11 | 22 | 1,295 | 955 | 2,176 | 1,818 | — | — | 3,482 | 2,795 |
| Total | 817,114 | 870,953 | 545,241 | 507,598 | 434,168 | 380,593 | 119,471 | 101,057 | 1,915,994 | 1,860,201 |

* Interplanted.

## CROP PRODUCTION

### Quantities Marketed and Estimated Values (African Production)

*(Values Based on Prices Paid to Growers)*

| Province/District | Coffee* | Seed Cotton | | Tobacco—Flue-cured (cured leaf) | | Tobacco—Flue-cured (green leaf) | | Tobacco—Air-cured (cured leaf) | | Tobacco—Fire-cured (cured leaf) | | Total Value | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | 1959 | 1958 |
| | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | £ | £ |
| *Eastern—* | | | | | | | | | | | | | |
| Busoga .. .. | 85,079 | 58,120 | 2,805,869 | — | — | — | — | — | — | — | — | 2,890,948 | 3,058,197 |
| Bugisu .. .. | 775,179 | 4,465 | 213,037 | — | — | — | — | — | — | — | — | 988,216 | 1,601,552 |
| Bukedi .. .. | — | 26,821 | 1,290,563 | — | — | — | — | — | — | — | — | 1,290,563 | 1,358,681 |
| Teso .. .. | — | 26,916 | 1,318,347 | — | — | — | — | — | — | — | — | 1,318,347 | 1,310,036 |
| Total .. | 860,258 | 116,322 | 5,627,816 | — | — | — | — | — | — | — | — | 6,488,074 | 7,328,466 |
| *Northern—* | | | | | | | | | | | | | |
| Lango .. .. | — | 22,709 | 1,148,047 | 3 | 606 | — | — | — | — | — | — | 1,148,653 | 1,013,609 |
| Acholi .. .. | — | 14,494 | 725,814 | 48 | 11,748 | 1,532 | 15,422 | — | — | — | — | 752,984 | 990,640 |
| Karamoja .. .. | — | 188 | 9,654 | — | — | — | — | — | — | — | — | 9,654 | 9,408 |
| West Nile/Madi .. | 4,359 | 10,624 | 518,928 | 8 | 1,783 | 3,949 | 42,261 | 196 | 23,514 | — | — | 590,845 | 584,211 |
| Total .. | 4,359 | 48,015 | 2,402,443 | 59 | 14,137 | 5,481 | 57,683 | 196 | 23,514 | — | — | 2,502,136 | 2,597,868 |
| *Western—* | | | | | | | | | | | | | |
| Bunyoro .. .. | 10,473 | 6,573 | 325,313 | — | — | — | — | — | — | 1,708 | 203,054 | 538,840 | 455,837 |
| Toro.. .. .. | 349,619 | 5,475 | 281,448 | — | — | — | — | — | — | — | — | 631,067 | 477,252 |
| Kigezi .. .. | 13,556 | — | — | — | — | 498 | 4,726 | — | — | — | — | 18,282 | 12,964 |
| Ankole .. .. | 285,745 | — | — | — | — | — | — | — | — | — | — | 285,745 | 393,625 |
| Total .. | 659,393 | 12,048 | 606,761 | — | — | 498 | 4,726 | — | — | 1,708 | 203,054 | 1,473,934 | 1,339,678 |
| *Buganda—* | | | | | | | | | | | | | |
| Mengo .. .. | 8,027,579 | 51,614 | 2,646,866 | — | — | — | — | — | — | — | — | 10,674,445 | 10,217,014 |
| Masaka .. .. | 4,062,228 | 3,973 | 197,771 | — | — | — | — | — | — | — | — | 4,259,999 | 3,048,033 |
| Mubende .. .. | 111,373 | 4,836 | 237,843 | — | — | — | — | — | — | 288 | 27,477 | 376,693 | 405,542 |
| Total .. | 12,201,180 | 60,423 | 3,082,480 | — | — | — | — | — | — | 288 | 27,477 | 15,311,137 | 13,670,589 |
| Protectorate Total .. | 13,725,190 | 236,808 | 11,719,500 | 59 | 14,137 | 5,979 | 62,409 | 196 | 23,514 | 1,996 | 230,531 | 25,775,281 | 24,936,601 |

* For details of types of production and tonnages, *see* Appendix IV (*b*).

Note.—Crops included in this table are those for which quantities marketed and estimated values are known with accuracy. Crops such as maize, groundnuts, etc., of which considerable quantities are marketed are not included as reliable estimates of quantities and value are not available. All figures in this table given to nearest ton and £.

# COFFEE PRODUCTION*

## Quantities Marketed and Estimated Values

*(Values Based on Prices Paid to Growers)*

For the Year 1959

| Province/District | Arabica | | | | | | Robusta | | | | | | Total Value |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Parchment | | Rough-hulled | | Dried Cherry | | Rough-hulled | | Dried Cherry | | Clean | | |
| | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | Quantity | Value | |
| | *Tons* | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | *Tons* | £ | £ |
| *Eastern*— | | | | | | | | | | | | | |
| Busoga .. .. | — | — | — | — | — | — | — | — | 1,316 | 85,079 | — | — | 85,079 |
| Bugisu .. .. .. | 4,912 | 764,072 | — | — | 200 | 11,107 | — | — | — | — | — | — | 775,179 |
| Bukedi .. .. | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Teso .. .. .. | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Total .. | 4,912 | 764,072 | — | — | 200 | 11,107 | — | — | 1,316 | 85,079 | — | — | 860,258 |
| *Northern*— | | | | | | | | | | | | | |
| Lango .. .. .. | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Acholi .. .. .. | — | — | — | — | — | — | — | — | — | — | — | — | — |
| Karamoja .. .. | — | — | — | — | — | — | — | — | — | — | — | — | — |
| West Nile .. .. | — | — | 5 | 1,022 | 38 | 3,050 | 2 | 274 | — | 13 | — | — | 4,359 |
| Total .. | — | — | 5 | 1,022 | 38 | 3,050 | 2 | 274 | — | 13 | — | — | 4,359 |
| *Western*— | | | | | | | | | | | | | |
| Bunyoro .. .. | — | — | — | — | — | — | — | — | 162 | 10,473 | — | — | 10,473 |
| Toro .. .. .. | — | — | 802 | 156,507 | — | — | 1,314 | 192,916 | 3 | 196 | — | — | 349,619 |
| Kigezi .. .. .. | — | — | 20 | 3,858 | — | — | — | — | 150 | 9,698 | — | — | 13,556 |
| Ankole .. .. | — | — | 113 | 21,834 | 918 | 73,704 | 2 | 233 | 2,939 | 189,974 | — | — | 285,745 |
| Total .. | — | — | 935 | 182,199 | 918 | 73,704 | 1,316 | 193,149 | 3,254 | 210,341 | — | — | 659,393 |
| *Buganda*— | | | | | | | | | | | | | |
| Mengo .. .. | — | — | 581 | 119,229 | 549 | 52,852 | 2,431 | 346,947 | 93,308 | 6,586,238 | 6,721 | 922,313 | 8,027,579 |
| Masaka .. .. | — | — | 10 | 1,864 | 249 | 21,793 | 566 | 79,545 | 31,771 | 2,323,260 | 11,920 | 1,635,766 | 4,062,228 |
| Mubende .. .. | — | — | — | — | 58 | 4,656 | — | — | 1,258 | 81,330 | 185 | 25,387 | 111,373 |
| Total .. | — | — | 591 | 121,093 | 856 | 79,301 | 2,997 | 426,492 | 126,337 | 8,990,828 | 18,826 | 2,583,466 | 12,201,180 |
| Protectorate Total .. | 4,912 | 764,072 | 1,531 | 304,314 | 2,012 | 167,162 | 4,315 | 619,915 | 130,907 | 9,286,261 | 18,826 | 2,583,466 | 13,725,190 |

* For African Estate Production, *see* Appendix VI.

All figures in this table given to nearest ton and £.

## OVERSEAS EXPORTS OF AGRICULTURAL PRODUCE, 1957 1959

| Article | Unit | Quantities | | | Value in £ | | |
|---|---|---|---|---|---|---|---|
| | | 1957 | 1958 | 1959 | 1957 | 1958 | 1959 |
| *Oilseeds and Products :* | | | | | | | |
| Cotton Seed | *Tons* | 1,396 | 402 | — | 36,677 | 7,547 | — |
| Castor Seed | *Tons* | 1,757 | 2,614 | 2,378 | 113,941 | 119,118 | 106,776 |
| Groundnuts | *Tons* | 11,330 | 7,370 | 3,158 | 680,298 | 343,102 | 168,217 |
| Sesame Seed | *Tons* | 484 | 554 | 423 | 33,517 | 40,819 | 25,276 |
| Sunflower Seed | *Tons* | 165 | 172 | 262 | 6,550 | 5,073 | 7,899 |
| Cotton Seed Cake | *Tons* | 52,293 | 65,154 | 71,731 | 1,229,178 | 1,065,989 | 1,623,809 |
| Cotton Seed Oil | *Tons* | 3,710 | 2,097 | 2,770 | 432,722 | 238,635 | 265,373 |
| Groundnut Oil | *Tons* | 534 | 34 | 98 | 66,683 | 3,873 | 8,296 |
| Other Vegetable Oils | *Tons* | 1 | 2 | 15 | 140 | 238 | 1,997 |
| Other Oilseed Cake, Meals and other Vegetable Oil residues | *Tons* | 249 | 923 | 563 | 7,020 | 22,688 | 16,384 |
| *Fibres :* | | | | | | | |
| Cotton, Raw | *Tons* | 60,149 | 69,199 | 66,667 | 17,476,282 | 18,141,400 | 15,427,910 |
| Sisal | *Tons* | 361 | 394 | 580 | 19,854 | 22,550 | 38,428 |
| *Beverage Crops and Tobacco :* | | | | | | | |
| Coffee, not roasted | *Tons* | 84,029 | 78,692 | 88,406 | 21,586,756 | 20,827,270 | 18,687,939 |
| Tea | *Tons* | 2,734 | 2,673 | 3,290 | 1,080,908 | 979,210 | 1,186,223 |
| Unmanufactured Tobacco | *Tons* | 33 | 4 | 14 | 5,600 | 820 | 3,787 |
| *Spices and Drugs :* | | | | | | | |
| Chillies | *Tons* | 244 | 201 | 143 | 44,063 | 31,017 | 26,780 |
| Cinchona Bark | *Tons* | 1 | — | — | 186 | — | — |
| Papain | *Tons* | 4 | 7 | 10 | 8,784 | 18,839 | 16,728 |
| Vanilla | *Tons* | 2 | 2 | 3 | 6,507 | 5,011 | 15,310 |
| *Beans and Pulses* | | | | | | | |
| Soya Beans | *Tons* | 437 | 670 | 437 | 16,933 | 23,679 | 16,323 |
| Others | *Tons* | 105 | 342 | 1,322 | 4,610 | 20,515 | 45,123 |
| *Cereals :* | | | | | | | |
| Maize | *Tons* | 366 | 22 | — | 9,205 | 250 | — |
| Others | *Tons* | — | 1 | 1 | — | 98 | 83 |
| *Miscellaneous :* | | | | | | | |
| Rubber | *Tons* | — | 3 | 10 | — | 550 | 2,362 |
| Ethyl Alcohol | *Imp. gal.* | 80 | 320 | 320 | 40 | 89 | 92 |
| Sugar | *Tons* | 26 | 30 | 1 | 1,690 | 1,766 | 75 |
| | | | | Total £ | 42,868,144 | 41,920,146 | 37,691,190 |

## EXPORTS OF AGRICULTURAL PRODUCTS TO KENYA AND TANGANYIKA—1959

| Article | Unit | Quantity | | | Value in £ | | |
|---|---|---|---|---|---|---|---|
| | | To Kenya | To Tanganyika | Total | To Kenya | To Tanganyika | Total |
| *Oilseeds and Products :* | | | | | | | |
| Cotton Seed | *Tons* | — | — | — | — | — | — |
| Cotton Seed Cake | *Tons* | 1,653 | — | 1,653 | 26,291 | — | 26,291 |
| Other Oilseed Cakes, Meals and other Vegetable Oil residues | *Tons* | 1,012 | 36 | 1,048 | 27,402 | 839 | 28,241 |
| Sesame Seed | *Tons* | 18 | 10 | 28 | 1,095 | 636 | 1,731 |
| Groundnuts | *Tons* | — | 46 | 46 | — | 2,599 | 2,599 |
| Cotton Seed Oil | *Tons* | 7,025 | 1,650 | 8,675 | 681,539 | 153,310 | 834,849 |
| Groundnut Oil | *Tons* | 35 | 26 | 61 | 3,975 | 2,965 | 6,940 |
| Other Vegetable Oils | *Tons* | 24 | 3 | 27 | 2,500 | 326 | 2,826 |
| *Beverage Crops and Tobacco :* | | | | | | | |
| Coffee, not roasted | *Tons* | 4 | — | 4 | 695 | — | 695 |
| Tea | *Tons* | 182 | 46 | 228 | 63,029 | 17,863 | 80,892 |
| Unmanufactured Tobacco | *Lb.* | 4,805,795 | 35,811 | 4,841,606 | 806,464 | 2,797 | 809,261 |
| Cigars, Cheroots and Manufactured Tobacco | *Lb.* | 1,366 | 413 | 1,779 | 614 | 186 | 800 |
| *Fibres :* | | | | | | | |
| Cotton Linters | *Tons* | 48 | 16 | 64 | 3,397 | 1,053 | 4,450 |
| Sisal | *Tons* | 6 | — | 6 | 263 | — | 263 |
| *Spices :* | | | | | | | |
| Chillies | *Tons* | 5 | 2 | 7 | 675 | 229 | 904 |
| *Beans and Pulses :* | | | | | | | |
| Beans, Peas and Lentils | *Tons* | 257 | 1,547 | 1,804 | 8,594 | 40,923 | 49,517 |
| *Cereals :* | | | | | | | |
| Maize | *Tons* | — | 6 | 6 | — | 105 | 105 |
| Millet | *Tons* | 2 | 116 | 118 | 89 | 3,309 | 3,398 |
| Others | *Tons* | 2 | — | 2 | 82 | — | 82 |
| *Miscellaneous :* | | | | | | | |
| Rubber | *Tons* | 33 | — | 33 | 6,920 | — | 6,920 |
| Ethyl Alcohol | *Imp. gal.* | 91,045 | 56,953 | 147,998 | 22,707 | 14,166 | 36,873 |
| Sugar | *Tons* | 10,412 | 3,298 | 13,710 | 468,816 | 146,882 | 615,698 |
| Jaggery | *Tons* | 1 | 5 | 6 | 30 | 161 | 191 |
| | | | | Total £ | 2,125,177 | 388,349 | 2,513,526 |

## CROP PRODUCTION, UGANDA

### Non-African Production, 1958 and 1959

| Crop | Estimated Acreage | | Estimated Production | | | |
|---|---|---|---|---|---|---|
| | | | Quantity | | Value | |
| | 1958 | 1959 | 1958 | 1959 | 1958 | 1959 |
| | | | *Tons* | *Tons* | £ | £ |
| Coffee (Robusta) | 22,519 | 27,729* | 12,543 | 7,882† | 3,198,465 | 1,596,972 |
| Coffee (Arabica) | 2,922 | 3,016 | 543 | 363 | 162,900 | 94,380 |
| Sugar .. | 33,047 | 34,356 | 80,889 | 81,753 | 3,759,455 | 3,912,545 |
| Tea .. .. | 14,898 | 15,828 | 3,691 | 4,357 | 1,351,649 | 1,517,179 |
| Sisal .. .. | 6,000 | 6,000 | 480 | 506 | 25,000 | 27,500 |
| Total .. | 79,386 | 86,929 | — | — | 8,497,469 | 7,148,576 |

* Includes 4,482 acres on African estates.

† Includes 1,352 tons African estate production.

## POPULATION AND AVAILABILITY OF LAND

| Province/District | Total area | Area of land excluding open water and reserved forests | Cultivated area | Population* | Population density | Cultivated land per head of population | Estimated available land per head of population | Ratio of available land to cultivated land |
|---|---|---|---|---|---|---|---|---|
| | *Sq. miles* | *Sq. miles* | *Acres* | | *Per sq. mile* | *Acres* | *Acres* | |
| *Buganda—* | | | | | | | | |
| Mengo .. .. | 14,589 | 10,047 | 1,239,977 | 1,294,879 | 129 | 0·96 | 4·97 | 5·17 |
| Masaka .. .. | 8,122 | 3,969 | 404,598 | 440,180 | 111 | 0·92 | 5·77 | 6·27 |
| Mubende .. .. | 2,679 | 2,581 | 106,487 | 99,069 | 38 | 1·07 | 16·67 | 15·58 |
| TOTAL .. | 25,390 | 16,597 | 1,751,062 | 1,834,128 | 111 | 0·95 | 6·45 | 6·79 |
| *Eastern—* | | | | | | | | |
| Busoga .. .. | 6,876 | 3,219 | 786,262 | 660,507 | 205 | 1·19 | 3·12 | 2·62 |
| Bugisu and Mbale Township .. | 1,597 | 1,166 | 408,492 | 361,318 | 310 | 1·13 | 2·07 | 1·83 |
| Bukedi .. .. | 1,770 | 1,701 | 545,797 | 397,650 | 234 | 1·37 | 2·74 | 2·00 |
| Teso .. .. | 4,990 | 4,533 | 869,944 | 453,474 | 100 | 1·91 | 6·40 | 3·35 |
| TOTAL .. | 15,233 | 10,619 | 2,610,495 | 1,872,949 | 176 | 1·39 | 3·63 | 2·61 |
| *Northern—* | | | | | | | | |
| Acholi .. .. | 11,176 | 10,703 | 346,464 | 285,530 | 27 | 1·21 | 23·99 | 19·83 |
| Lango .. .. | 4,898 | 4,519 | 630,474 | 352,943 | 78 | 1·79 | 8·19 | 4·58 |
| Karamoja .. .. | 11,472 | 10,336 | 103,353 | 171,945 | 17 | 0·60 | 38·47 | 64·12 |
| West Nile/Madi .. | 6,061 | 5,294 | 505,529 | 434,553 | 82 | 1·16 | 7·80 | 6·72 |
| TOTAL .. | 33,607 | 30,852 | 1,585,820 | 1,244,971 | 40 | 1·27 | 15·86 | 12·49 |
| *Western—* | | | | | | | | |
| Bunyoro .. .. | 6,011 | 4,198 | 178,759 | 126,875 | 30 | 1·41 | 21·18 | 15·02 |
| Toro .. .. | 5,380 | 4,319 | 244,654 | 347,479 | 80 | 0·70 | 7·95 | 11·36 |
| Ankole .. .. | 6,320 | 5,621 | 359,800 | 529,712 | 94 | 0·68 | 6·79 | 9·99 |
| Kigezi .. .. | 2,040 | 1,757 | 462,891 | 493,444 | 281 | 0·94 | 2·28 | 2·43 |
| TOTAL .. | 19,751 | 15,895 | 1,246,104 | 1,497,510 | 94 | 0·83 | 6·79 | 8·18 |
| PROTECTORATE TOTAL .. | 93,981 | 73,963 | 7,193,481 | 6,449,558 | 87 | 1·12 | 7·34 | 6·58 |

* 1959 Census figure.

## PRINCIPAL AGRICULTURAL LEGISLATION

| Subject | Ordinance No. | Legal Notice No. | Short Title | Objects |
|---|---|---|---|---|
| Coffee .. .. | — | 120 | Coffee Industry Ordinance, 1953 .. | To increase hullery processing quotas. |
| | 15 | — | Coffee Ordinance, 1959 .. .. | 1. To amend and consolidate the law relating to the marketing and processing of coffee.<br>2. To establish a Coffee Price Committee.<br>3. To establish a Coffee Marketing Board.<br>4. To make provision for the participation of Associations of Growers in the Price Assistance Fund.<br>5. To establish a Coffee Advisory Council. |
| | — | 155 | Coffee Ordinance, 1959 .. .. | To appoint the Director of Agriculture as Director for the purposes of the Ordinance. |
| | — | 232 | Coffee (Appeals) Rules, 1959 .. | To lay down procedure for appeals brought under section 24 of the Coffee Ordinance. |
| | — | 310 | Coffee (Dealing and Storage) Rules, 1959.. .. .. .. | To regulate the sale and dealing in coffee bought by the Board. |
| | — | 261 | Coffee (Grading and Export) Rules, 1959.. .. .. .. | To regulate the grading and export of coffee. |
| | — | 275 | Coffee (Primary Marketing and Processing) Rules, 1959 .. .. | To regulate primary marketing and processing of coffee. |
| | — | 233&292 | Coffee Price Assistance Rules, 1959.. | To regulate the participation of Associations of Growers in the Price Assistance Fund. |
| | — | 305 | Kigezi District Coffee Production Bye-law, 1959 .. .. | To improve the standard of coffee growing in the Kigezi District. |
| Cotton .. .. | 18 | — | Cotton (Amendment) Ordinance, 1959.. .. .. .. | 1. To make new arrangements for fixing prices of raw cotton, lint cotton and cotton seed, together with maximum prices for ginning and baling.<br>2. To vary the conditions for issuing a cotton buyer's licence.<br>3. To establish a Cotton Advisory Council.<br>4. To empower the Commissioner for Co-operative Development to settle disputes which may arise concerning the division of extra shares among African Co-operatives.<br>5. To increase the scheduled crop for the Mbale Zone. |
| | — | 51 | Cotton Ordinance, 1952 .. .. | To fix maximum prices for ginning and baling cotton. |
| Lint Marketing Board .. | 16 | — | Lint Marketing Board Ordinance, 1959.. .. .. .. | To amend and consolidate the law relating to export of cotton lint and cotton seed and to make further provision for the Cotton Price Assistance Fund. |
| Grass Burning .. | — | 276 | Ankole Burning of Grass Bye-law, 1959.. .. .. .. | To control grass burning in Ankole District. |
| | — | 33 | Bunyoro Conservation Committee (Establishment) Order, 1959 .. | To establish a conservation committee in Bunyoro District. |
| | — | 338 | Tea Amendment Rules, 1959 .. | To regulate the issue of tea export permits. |

# LIST OF PUBLICATIONS BY MEMBERS OF THE DEPARTMENT DURING 1959

## AGRONOMY SECTION

PARSONS, D. J., *Systems of Agriculture Practised in Uganda.*

*Part I, Teso Systems.* Mem. Res. Div., Dept. Agric., Uganda. Ser. 6, 1 (1960).

The history, climate, geography, soils and vegetation of Teso District are summarised. Details of human and stock populations are discussed in so far as they affect the utilisation of the land. Land tenure and certain other social problems affecting agriculture are also discussed. A description of the present systems of agriculture practised in the district follows. For this purpose the district is divided into three areas in which the systems vary slightly. Finally, as a result of the study of these systems, factors limiting production are isolated and studied and definite proposals made whereby the economy of the district can be improved.

*Part II, Plantains—Robusta Coffee Systems.* ibid., 2 (1960).

The Plantains—Robusta Coffee Systems of Uganda are described and shown graphically. The history, geography, soils, climate and vegetation of the area are summarised briefly. Details of human and stock populations are discussed in so far as they affect the utilisation of the land. Land tenure and other social customs which condition land use are also considered. A detailed description of the present systems of agriculture practised in the area follows. As a result of a study of these systems factors limiting production are isolated and studied and proposals are made whereby the economy of the area can be improved.

## BOTANY SECTION

HIRST, W., *Sorghum.* Mem. Res. Div., Dept. Agric., Uganda. Ser. 3, 1.

This memoir is divided into three parts which are summarised separately below: —

*I. The Importance of Sorghum in Relation to Other Crops.*

In the wettest parts of Uganda, fresh foods are grown and are preferred but elsewhere foods that keep well during storage are required. Finger millet is the main food crop of the country on account of its insect resistance during storage and good yields. Maize is unpopular as a dried cereal because in the wettest areas, where it yields best, the people prefer fresh foods, and in the drier areas the present peasant plantings produce poor, unreliable yields. In the areas of intermediate rainfall it could be most useful, but the people there, as elsewhere, regard it as an inferior food. Rice and bulrush millet are little grown on account of their extreme susceptibility to bird damage and the fibrous grain of the latter. Although sorghum stores badly, and is not much liked as either food or drink, it is widely grown because it is easy to obtain high yields even on poor soils at various times of the year.

*II. The Forms Grown and Their Agricultural Status.*

Seven different sorghum populations are found in Uganda: (1) Banana-beer sorghums, (2) Kigezi sorghums, (3) Short-term north-eastern sorghums, (4) Ratooning northern sorghums, (5) Long-term northern sorghums, (6) Long-term West Nile sorghums, (7) Short-term and ratooning West Nile sorghums.

Their origins and genetic relationships are obscure. They remain distinct because of geographic isolation and selection for different purposes.

Their distribution and status in various parts of Uganda is greatly affected by climatic differences. In the south-west, the Bantu cultivators have a diet of fresh food, supplemented in times of shortage by the better storable finger millet. Banana-beer sorghums are only grown on a small scale for flavouring their banana beer.

In the drier north-east, finger millet is the main food, except in the dry plains of Karamoja where only short-term sorghums can be grown. Sorghum is widely grown throughout the area, however, and it is especially popular where it matures at a different time of year from finger millet and where it ripens in the dry season because it then stores better. In the north, where the rainfall distribution is monomodal, long-term forms are popular and ratooning forms are much grown because they produce the first crop after the dry season. In the east the rainfall is bimodal and two annual short-term crops are grown.

*III. Improvement.*

Agriculture in Uganda has been changing rapidly during the present century with the expansion of external trade. Farming systems have not kept pace with modern development. It appears that in the future sorghum can be of much greater importance as it yields well during a period of the year when few other crops do so. Means by which sorghum grain characters and yields can be improved are considered, and the future status of the crop in the different areas of Uganda are discussed.

Langdale-Brown, I., *The Vegetation of the Eastern Province of Uganda.* Mem. Res. Div., Dep. Agric., Uganda. Ser. 2, **1** (1959).

This survey is concerned primarily with the savanna vegetation of the Eastern Province of Uganda—an area of 15,233 square miles. Fifty-eight communities are distinguished on successional and floristic criteria. The composition, physiognomy, successional status, environment and present land-use of each is discussed. The distribution of these communities are mapped on the scale 1: 500,000 (1 inch equals about 8 miles) and their successional relationships are outlined in 9 diagrams. Small scale maps of land-use, cultivation density, natural climax types and physiological potential illustrate the connections between current agricultural practice, vegetation and agricultural potential.

*The Vegetation of Buganda.* ibid., **2** (1959).

This memoir records the findings of an ecological survey of Buganda—an area of 23,390 square miles. The survey was designed primarily as an aid to agricultural development and was restricted to the savanna vegetation. Forty-four communities are distinguished on successional and floristic criteria. The composition, physiognomy, successional status and environment of each is discussed. The distribution of these communities are mapped on the scale 1: 500,000 (1 inch equals about 8 miles). Additional maps of land-use, cultivation density, natural climax types, physiological potential, volunteer pastures and physiognomy illustrate ecological relationships and emphasise the connections between current agricultural practice, vegetation and agricultural potential.

CHENERY, E. M., and SHOENMAEKERS, J., *Magnesium Deficiency in East African Tea.* E. Afr. Agric. J., 25, 25 (1959).

The symptoms of magnesium deficiency in the tea bush are described. It is believed that this is the first record for tea grown in Africa.

OLLIER, C. D., *The Soils of the Northern Province of Uganda.* Mem. Res. Div. Dep. Agric., Uganda. Ser. 1, 2 (1959).

Descriptions of the soils of Northern Province, excluding Karamoja, are presented within the framework of a geomorphological classification. Twenty-four soil mapping units are recognised and analytical data given for 42 typical profiles.

*Etchplains and Inselbergs in Uganda.* Zeit. f. Geomorph. (In press).

Many surfaces in Uganda are etched surfaces, that is formed by erosion of deeply pre-weathered rock, and could be termed "etchplains". Much of the African surface is very flat, but in the writer's opinion not flatter than either the Gondwana surface or the Acholi surface, and extreme flatness need not be part of the definition of etchplains. Some etched surfaces, such as that on the Mubende granite, are rugged. The process of deep rock rotting, the necessary prerequisite of etching, appears to have taken place only once, beneath the Gondwana surface.

Deeply weathered rock has been reported from many parts of the world, including Dartmoor, Nigeria, Hong Kong and the Sudan, and it seems probable that etchplains may have a wider distribution than has previously been recognised. Yet if etchplaining only happened once in the erosional history of Uganda, it might seem remarkable that etchplains should be present in many other parts of the world. Other possible occurrences, however, might have more in common with the Uganda etchplains than deep weathering. They might be all of the same age. Professor King postulates a master surface of early tertiary age below which there was deep weathering which later gave rise to subskyline tors. The Gondwana surface in Uganda might be part of such a master surface.

It is possible that in early tertiary times there was such a combination of climate and flat topography over many parts of the earth that deep rotting of rock occurred on a world-wide scale, which later gave rise to a unique type of erosion surface—the etchplain?

OLLIER, C. D. and HARROP, J. F., *The Soils of the Eastern Province of Uganda.* Mem. Res. Div., Dep. Agric., Uganda. Ser. 1, 3 (1959).

The soils of Eastern Province are described in this memoir and delineated on a map. They are classified geomorphologically according to erosion surfaces. Twenty-six soil mapping units are differentiated, each of which is accompanied by notes on the morphology, plant nutrient status and agricultural use.

RADWANSKI, S. A., *Soil Survey and the Problems of Soil Classification in the Kingdom of Buganda.* Proc. 3rd Int. Afric. Soils Conf. (In press).

Two main approaches to the problem of soil classification have been made.

A scheme of agricultural classification has been worked out. In this scheme soils are classified into "land classes" according to the progressive number of limitations as regards their agricultural usage.

A number of soil catenas have been recognised in Buganda and these are the basic units for a pedological classification. Each catena consists of several soil series which can be arranged into three morphogenetic groups. The soils within the groups of any one catena show considerable similarities to their counterparts in other catenas and this fact may be used as the first step in attempting to place them into higher categories of soil classification.

Deeply weathered soils present the most difficult problem in their classification. These soils are truly polygenetic, i.e. their parent materials have been subjected to more than one cycle of weathering and erosion. Although they often lack clearly defined morphological features they occur in distinct topo-climatic units which are not difficult to map in the field. As they are associated with various ancient erosion levels and are also likely to have developed under bio-climatic régimes which are not operative today, a purely morphological classification of these soils seems insufficient to define them and a genetic approach based on the study of landscape forms and any other evidence of the past climates (particularly in the pleistocene period) is necessary in order to obtain a full understanding of the pedogenesis.

*The Soils and Land-use of Buganda.* Mem. Res. Div., Dept. Agric., Uganda. Ser. 1, 4 (1960).

The soils and land-use of the Kingdom of Buganda are described in 33 mapping units. Information is recorded on their morphology, genesis, pedological and land-use classifications. The memoir is accompanied by ten maps and there are 11 figures in the text.

Simpson, J. R., *The Mechanism of Surface Nitrate Accumulation on a Bare Fallow Soil in Uganda.* J. Soil Sci. (1960). (In press.)

Under the field conditions represented by a red latosol loam under bare fallow at Kawanda, Uganda, nitrate accumulates to high concentration, e.g. 70 p.p.m. $NO_3$-N, during short periods of dry weather. A study has been made of the mechanism by which these accumulations occur.

The nitrate accumulation was partially inhibited by sodium trichloracetate and by acid conditions. It therefore appears to be predominantly a microbiological process involving nutrifying bacteria which are abundant in this soil and which are affected similarly to *Nitrosomonas* and *Nitrobacter* by allyl thicurea and chlorate respectively.

Nitrate accumulation in an isolated topsoil, 3 inches deep, ceased when the moisture content fell below 10 per cent. Accumulation continued on plots which were in contact with the subsoil and which remained at 10 per cent moisture.

Determinations were made in the field of the return of nitrate and chloride ions towards the soil surface during drying after an earlier leaching. Although there was a distinct tendency for these ions to remain in the 0–3-inch and 3–9-inch horizons the upward movement was slow, in comparison with rates of nitrate formation in incubated laboratory samples. It must therefore be concluded that under the conditions of this experiment, the physical transport of ions to the surface by capillary transport or diffusion does occur but is not responsible for the major nitrate accumulation.

Application of cyanide and chlorate in the field produced a significantly higher nitrate level during a three-month period. This, together with laboratory observations on nitrate removal, indicates the operation of an important nitrate-reducing process when rain falls on a dry topsoil, rich in nitrate.

Mulch and shade had similar effects in suppressing nitrate accumulation in the field and it is unlikely that these effects are due to the temperature differences imposed. The prevention of evaporation and absence of a drying cycle under shade or mulch is the probable cause of the marked suppression.

On the other hand, well-aerated samples incubated for two weeks in the laboratory at different constant moisture contents, showed progressively greater nitrate formation as the moisture content was increased from 6 per cent up to 20 per cent moisture.

It is concluded that nitrate accumulation in this soil depends on progressive drying of the topsoil during which nitrate, as formed, becomes protected from microbial reduction, assimilation and leaching by the dry conditions. Any process which prevents the progressive drying, e.g. shading, mulching and watering, can be expected to favour nitrate removal and so to suppress the nitrate accumulation.

## ENTOMOLOGY SECTION

BOWDEN, J., *A Note on the Horn of the Beetle* Dynastes centaurus (F). J. Ent. Soc. S. Afr., 22, 78 (1959).

Observations are recorded on the lengths of the cephalic and thoracic horns and body weights of 556 male *D. centaurus* collected at a light trap near Kumasi, Ghana. It is shown that the relationship between these measurements is better expressed by a cube root than by a logarithmic transformation, indicating an arithmetic rather than an exponential relationship. It is therefore suggested that these horns do not show allometric growth. It is also suggested that a similar relation may exist in other holometabolous insects possessing horns or other outgrowths.

*Studies in African Bombyliidae I.* Two New Species of *Antonia* Loew. ibid., 13 (1959).

*Antonia occidentalis* described from Nigeria, *A. aurata* from Uganda.

*Studies in African Bombyliidae II.* New East African Species of *Systoechus* Loew. ibid., 298 (1959).

*Systoechus nivercomatus, S. canicapillis* and *S. flavicapillis* described from Kenya; *S. heteropogon* from Uganda; *S. auricomatus* from Kenya and Tanganyika; *S. cellularis* from Uganda.

DAVIES, J. C., *A Note on the Control of Bean Pests in Uganda.* E. Afr. Agric. J., 24, 174 (1959).

A brief description of the life history of the common Bruchid pests of legumes in Uganda is given. Results of trials admixing 8 oz. of 0·04 per cent gamma B.H.C. dust with 200 lb. of beans are presented. Weight loss and damage figures are recorded.

INGRAM, W. R., *Experiments on the Control of Stalk Borers in Sorghum in Uganda.* E. Afr. Agric. J., 25, 184 (1960).

A report is given on three experiments to try and control stalk borers in sorghum in Uganda. Treatments consisted of varying numbers of applications and rates of D.D.T. dust and miscible liquid and a blanket treatment of dieldrin throughout the crop's growth. A trial in the first rains was a complete failure as no stalk borers attacked the crop. Two second rains trials gave varying

degrees of control of stalk borer but no significant increases in yield were observed. This can be shown to be due to an increase in the number of heads, which though weighing less, even out the yield. There are also slight indications that the stronger formulations are phytotoxic to the local sorghums.

ODHIAMBO, T. R., *Notes on the East African Miridae VII.* New Species of *Oxacicoris* Reuter and *Phytocoris* Fallen from Uganda. Ann. Mag. nat. Hist., Ser. 13, **1**, 625 (1959).

*Oxacicoris rufotinctus* described from Uganda; *Phytocoris bimaculatus, P. rubrostrigatus, P. exilis, P. discrepans, P. anthracinus,* all from Uganda.

*Notes on the East African Miridae VIII.* Description of New Species of the Tribe *Stenodemini.* ibid., **1**, 733 (1959).

*Notostira brevifrons* described from Uganda; *Dolichomiris punctatus* from Uganda, and key to Ethiopian species; *Trigonotylus crassicornis* from Uganda, with key to Ethiopian species; *Nabidomiris longipennis* and *Schoutedenomiris propinquus* from Uganda.

*Notes on the East African Miridae IX.* Descriptions of a New Species of *Lasiolabops* Poppius and of *Psallus* Fieber. ibid., **1**, 758 (1959).

*Lasiolabops ficulneus* and *Psallus difficilis* from Uganda.

*Notes on East African Miridae X. Charagochilus* Fieber and Polymerus Hahn. ibid., **2**, 29 (1959).

*Charagochilus obscurellus, C. punctigerus* and *C. nigritus* described from Uganda, with key to Ethiopian species; *Polymerus ornatifrons* from Uganda, with key to Ethiopian species.

An account of parental care in *Rhinocoris albopilosus* Signoret (Hemiptera-Heteroptera: Reduviidae) with notes on its life history. Proc. R. ent. Soc. Lond. (A) **34**, 175–185. 2 figs.

1. Parental care and the life history of *Rhinocoris albopilosus* Signoret (Ruduviidae) were studied in Uganda, both in the laboratory and in the field.

2. After mating, the male continues to ride on the back of the female until the latter lays her eggs. When laying is completed, the female leaves the vicinity, but the male remains to guard the egg mass ("brooding") until a few days after hatching has started.

3. The oviposition period lasts from 4 to 12 days, during which the female lays several batches of eggs. All the batches are added to the first egg mass. Females in the neighbourhood may also add their eggs to this egg mass. During oviposition the laying female repeatedly mates with the male.

4. The young nymphs readily accepted thrips when offered for food; from the fourth instar, however, they showed a definite preference for larger insects like fruit flies and various plant bugs, bees, and beetles. Brooding males did not go in search of food, though they often caught flies which came near their brooding places.

5. The duration of nymphal life was about 8 to 10½ weeks in the laboratory, the females taking about a week longer than the males.

6. Two egg-parasites were bred from egg masses laid on stems of *Stylosanthes mucronata* Willd. (Leguminosae) at Kawanda, Uganda, namely *Hadronotus antestiae* Dodd and *Hadronotus* sp. nr. *hiberus* Nixon (Scelionidae). It is suggested that the brooding habit helps in keeping away egg-parasites.

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